Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

CONTENTS FOR FEBRUARY 1928

With the Editor 5
Chicago Furniture Show Finishes, by R. G. Meade 21
Motor Car Finishes at New York Auto Show, by Geo. D. Hirst, Inc. 24
Rochester's Automobile Show, by Arthur J. Owen 26
Wood Finishes Must Improve, by F. L. Browne 27
Finishes at Furniture Show in Grand Rapids, by J. C. Herstein, Jr. 28
Custom Shop Needed for Special Finishes, by J. K. Cooper 29
Materials for Dip Finishing, by E. Perry 30
Skimping the Finish, by Joseph Cowan 32
Every Detail a Selling Point, by Fred Mannhardt 34
Stains Under Lacquer, by S. M. Silverstein 39
Willow Furniture Colors 39
Colors, Designs and Finishes at the N. Y. Automobile Show, by R. L. Masterson 40
Special Fixture Finishing, by E. J. Nettel 46
Oil Stains: Lacquer, by S. M. Silverstein 50
To the Editor, by John A. Twamley 50
Common Lacquer Finishing Faults—and Their Remedies, by T. R. Nall 52
Wood Toys at Seattle Show, by C. M. Littlejohn 56
Mixing Stains for Wood, by John A. Twamley 60
Finishing Display Fixtures, by B. G. Wegman 64
Varnish Printed Furniture, by F. L. Browne 65
New Surface Masking Material 66
Finishes for Fir 66
Editorial 68
Samples in Color—A Merchandising Help.
Finishing is Taught in Schools.
Furniture by Airplanes.
Industrial Growth.
Finishing Radio Cabinets in Lacquer, by Joseph Cowan 69
Notes on Varnish, by T. R. N. 69
Lacquer Dipping, Draining, Brushing and Drying, by "Platt" 70
Measurements of Finishing Materials by Hydrometer, by W. H. Martindale 76
Blindness to Modern Progress, by Donald A. Hampson 84
Questions and Answers Section 87
Spraying Filler Under Lacquer, by L. N. W. and R. L. M. 89
Wood Lacquer Trouble, by L. N. W. and R. L. Masterson 89
Low Cost Walnut Finish on Other Woods, by J. G. M., I. F., and T. R. Nall 90
That Strange Finish on Furniture, by J. K. Cooper and H. B. Young & Co. 92
More About "Why Stain Fades," by James W. Byrnes 93
Burning in Shellac, O. K., by M. L. Campbell Co. 97
Mahogany Finishing Problems, by H. B. Young & Co. 97
What Metal Finish, by O. Inc. and S. P. Wilson 98
Sizing for Mahogany Stain on Basswood, by B. B. and H. B. Young & Co. 101
Water Staining, by S. M. Silverstein 101
Baked Finishing Section 103
A High Class Baked Enamel Finish on Cast Metals, by C. S. 105
Using Water Japan Finish, by Russell W. Brandt 108
New Rotary Brush Sections 110
Improved Overhead Trolley for Transferring Materials 111
New Fire Extinguisher 112
Imitation of Costly Woods, by W. R. K. 115
Windsor Chairs in Tudor Mahogany Lacquer Finish, by J. C. 117

Copyright, 1928

Published by Practical Publications, Inc., Room 802, 222 E. Ohio St., Indianapolis, Ind. A. T. Gaumer, President; W. H. Rohr, Vice President and Managing Editor; R. E. Suits, Secretary; E. A. Dosch, Treasurer. Eastern representative, C. A. Larson, 154 Nassau St., New York, N. Y., phone Beekman 3471. Western representative, Howard L. Watrous, 550 Wrigley Bldg., Chicago, Ills., phone Superior 2429. Missouri representative, G. H. Dirhold, 615 Star Bldg., St. Louis, Mo., phone Garfield 4645. Subscription rates, $1.00 per year in U. S. and possessions; $1.50 per year in Canada and $2.00 per year in foreign countries. Advertising rates on application.

NO BLUSH **NO BLOOM**

LACQUER SEALER *used as a first coater on natural wood finishes gives all the advantages of a good lacquer and has a body which builds a perfect foundation for* **DHRLAK-R** *in one coat.*

DHRLAK-R *is absolutely transparent and gives a hard, yet resilient finish in gloss or satin over* **SEALER** *or colored underbodies.*

D H R L A K

THE DHRLAK LACQUERING SYSTEM *embraces all classes of lacquer finishing in clear or colors, bronzes, crackles and special finishes.*

Your problems are solved, new economies shown and production is increased by the application of this system.

It needs no engineer to teach you.

"Gives Your Work a Bright Future"

DENNY, HILBORN & ROSENBACH, Inc.

BRANCHES:
New York
Chicago

Executive Offices
Lacquer and Enamel Plants
PHILADELPHIA

With the Editor

THIS issue of INDUSTRIAL FINISHING might properly be designated as a "Show Number," because of the amount of editorial matter devoted to designs, finishes, color schemes and decorative treatment exhibited by progressive firms at the mid-winter automobile and furniture shows. The latest designs and finishes are of increasing importance and they are of compelling interest—if we credit any significance to the large crowds that attended the shows.

The most brilliant and best informed minds in the automotive, furniture and finish manufacturing industries have created new designs and decorative features which, supplemented by improvements in engineering and utility characteristics, are relied upon to sell industrial products in larger volume and thereby give all business activities added impetus for a good start in 1928.

Exhibitions of the very latest in manufactured products are becoming more representative, more educational and of greater importance every year. From what manufacturers observe at these exhibitions, they judge the relative merits and sales appeal of their own and competitive products; they derive inspirations, suggestions and information which help in the formulation of plans for the future.

Manufacturers in all lines have come to realize that today the color, finish and general appearance of an article can increase or diminish the volume of sales of that article, regardless of any other merits it may have. When so much depends upon this one element of sales appeal, it is evident that the choice of decorative design and quality of finish is management's outstanding problem—once the utility, construction and engineering features of the product have been decided upon. Following this comes the problems of how to produce the desired decorative effect and quality of finish satisfactorily and economically. INDUSTRIAL FINISHING and its advertisers are prepared to service just such problems.

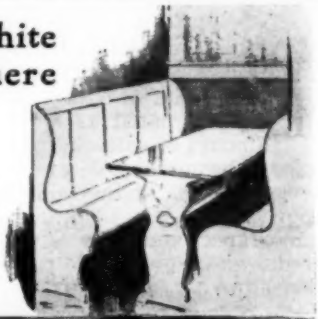
W. H. Rohr

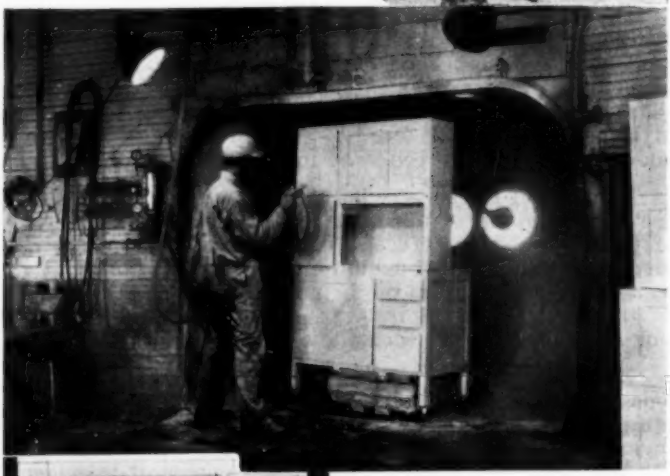
Managing Editor

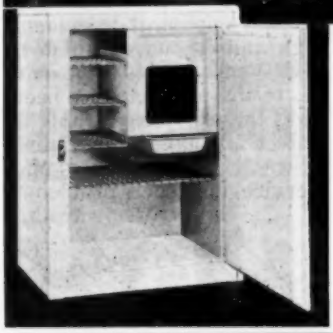
Where permanent white is imperative.....there you will find

PECORA CUTICLE ENAMEL

Stays white







For kitchen cabinets, refrigerators, breakfast sets, tables, hospital equipment and all other products finished in the white, CUTICLE ENAMEL is not only the ideal finish but it is the *logical* finish.

Protect your reputation and your products with CUTICLE ENAMEL.

PECORA PAINT COMPANY

3rd & Sedgley Streets
Philadelphia, Pa.

Established 1862 by Smith Bowen — Incorporated 1911

Chicago Furniture Show Finishes

An advanced student of classical and modern furniture designs and finishes —a keen and thorough observer—tells what he noticed in the way of designs, colors, finishes and decorative treatment, as exhibited at the great 1928 Mid-winter Market in Chicago

By R. G. Meade

TO the holder of the theory that furniture styles and finishes move in cycles, the 1928 Mid-winter Market at Chicago seems to offer strong justification. During the past three or four years, it would seem that a permanent premium had been placed on innovation, as each six months pushed one novelty aside to make room for a radically changed successor. It was obvious that the competitive race could not be kept up forever, and this year all hands seem to have agreed to a truce.

Yet there are some who say it is not a permanent truce, but only a breathing spell to see if the public taste has become more stabilized. Others say that ingenuity has become exhausted within the limits naturally set by taste and cost; still others cynically aver that it is now price alone, and not style or finish effect, that governs. Time will tell; meanwhile, let us see what a general survey of 16 floors and the new tower addition of the Mart reveals.

A Birdseye View

In point of design, the Spanish vogue has run its course and is scarcely to be seen anywhere. In fact, no single period can be said to predominate. Case goods lines show a co-mingling of Adam, Hepplewhite, and Louis XVI, which renders one suite scarcely distinguishable from another, except in woods and coloring. Perhaps our furniture, like our racial mixture, is in the melting pot stage and out of it will come a distinctive modern American style.

Walnut still leads among veneer woods, but it is trimmed, inlayed, and overlayed with possibly a greater variety of mahogany, maple, oak, sycamore, etc., than before. With notable exceptions, however, these woods are more closely toned to the predominating walnut shade than heretofore. Thus as trim, they are no longer finished in contrast but rather in harmony, depending for charm of effect more on distinctive natural figure than on coloring.

In addition to the trim woods mentioned, Hungarian ash, rosewood, thuja wood, tulip wood, and burls of magnolia, English elm and ash also appear—sometimes finished natural with white shellac, but united by means of shading. The tone of walnut ranges from a golden amber to a dark brown, the general trend being toward the latter.

With the tendency toward a deep brown body color, shading—once applied unsparingly—has been greatly modified. It has been completely eliminated on many exhibits so as to return to straight colors; the remainder serves rather to the varied woods together than to constitute a decoration by itself. In this manner, it is easy to stain the walnut, finish the trim woods natural, and

"fog" the whole so as to make the front appear as though it had always been one piece instead of "Joseph's coat."

Decoration, therefore, is found rather in veneer markings, mouldings, and carvings. The latter are almost invariably highlighted, sometimes wiped so free of color as to appear almost like bare wood, and this on pieces which are otherwise free of shaded or highlighted effects. The heavier overlays seem to be on the wane and, when they appear, are often without any shading at all. Vein or scratch lining, formerly colored in with gold bronze, blue, red, green, or yellow are now largely left natural or very subdued in hue.

Bed Room

The bed room lines show two and four-way unshaded walnut diamond pencil-stripe veneering, sometimes in sunburst effects. The frame work is of a dark tone to set off the combination mentioned. Bands of rosewood are checkered with contrasting satinwood against a background of nut-brown straight-grained walnut on another suite. Maple is no longer so popular in this class. Mahogany is finished a warm brown and is strong in the ever-popular Colonial and Duncan Phyfe numbers.

Painted suites are far more neutral in tone, favoring putty grays, cafe au lait, and the softest gray greens, with the barest smoke shading applied in a closely harmonizing shade. Favorite two-tones are soft green and cafe au lait, dull grayish blue and amber. Classic designs in decalcomania ribbands and medallions have generally replaced stippled overlays and garish floral groups. There is still more combining of walnut and enamel as well as birdseye maple and enamel.

Dining Room

With the decline of the Spanish vogue, there has gone also the novelty of china closets decorated in the Chinese manner over backgrounds of red, green, or blue enamel. The cabinet now matches the rest of the suite instead of constituting an individual splash of color. The heavier bulb-leg turnings have been considerably modified and overlays are recessed rather than raised to an increasing extent.

Scroll mouldings, to separate two-tone effects, are widely used —in fact the emphasis on curves, so popular in the bed room lines, is here, too, being introduced wherever possible. Shading is much less pronounced, and on carvings and leg turnings only the barest suggestion of highlighting is seen. Paint in scratch lines, flutings, and grooves has also gone by the board.

Living Room

Possibly as a reaction from the violent colorings of a year ago, the living room exhibits have gone back largely to natural wood effects. Far less Chinese red and green are seen than heretofore and the pronounced shaded effects too are missing. There is little new in design, nothing having appeared to replace the erstwhile popular Spanish.

In decoration, the oriental theme appears to have given way to marquetry and conventional classic themes, cleverly reproduced with decalcomania transfers. In the higher grade novelty lines, considerable satinwood is to be seen, alone and in combination

with walnut and mahogany. In the cheaper grades, brown mahogany and walnut finishes in straight colors have the call over crackle, spattering, veiling, stippling, etc.

Two-tone walnut and mahogany is still popular for odd tables, radio cabinets, smoking sets, and the like. The upholstered lines show less shading and highlighting and run less to painted effects, although in general there is not much change from last year in these groups, where mahogany and walnut seem to have decided to divide honors.

Breakfast Room

The demand for novelty in the breakfast room field continues brisk in the frosted effects. Since it has been learned that lacquer enamel, heavily reduced, affords a wider range of color and a simplified finishing schedule, the earlier dark gray and brown color schemes have given way to blue greens, taupe browns, yellow browns, etc. Many are finished natural with orange, blue, vermillion, and green shading and with leg bandings to match.

Wicker and Outdoor

Shading in bright colors has given way to darker shading over natural or pastel backgrounds. Spot woven patterns, too, seem to be on the decline; in fact the whole trend is to conservatism, one-color effects as against two or more in variegated combination. Shading has been captured by porch furniture, where it is going strong.

Kitchen Cabinets and Refrigerators

If the front of the house is growing more conservative, the furnishings for the hitherto obscure back portion are coming into their own, so far as color is concerned. The hospital white and former golden oak have given way to breakfast room effects in plain and frosted lacquer-enamel greens, grays, and browns. Soon it will be possible to have a breakfast set, a kitchen cabinet and an oak refrigerator all in the same color, so standardized have finishes in all three industries become.

Cedar Chests

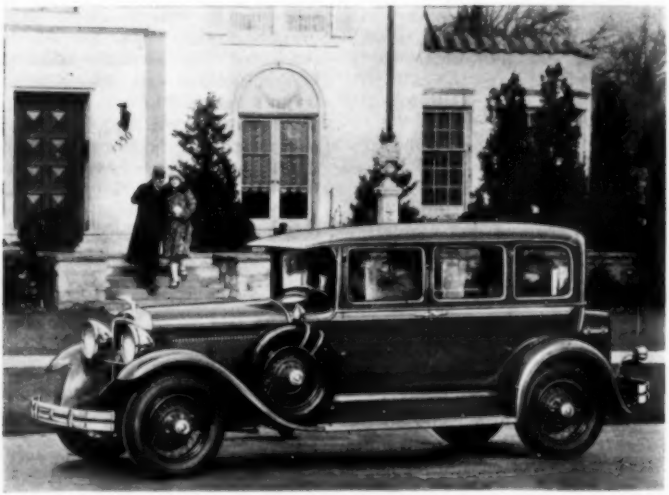
With the lack of pronounced period influence in the case goods field, the cedar chest manufacturer is somewhat at a loss for inspiration. The styles, therefore, are a co-mingling of various influences, minus Spanish, overlays, scroll mouldings, and carvings being played up over plain, rather dark, backgrounds. Painted and oriental finishes are less in evidence.

Metal Furniture

The advance in taste and ingenuity of finish in the metal bed field is worthy of commendation. The ability to duplicate the finest veneer, inlay, and marquetry effects is truly striking and the metallic note is a thing of the past. Decoration is in restraint and painted work seems to be considerably less in demand, along with everything in the nature of pure period design.

New Compressed Air Catalog

Curtis Pneumatic Machinery Co., St. Louis, Mo., has just issued its 1928 catalog C74 (74 years) which contains 44, 8½x11-in. pages of illustrated descriptive matter and specifications on a considerable variety of compressed-air and air-suction equipment—air compressors (portable and otherwise), air stands and rotating lifts, air storage tanks, car washers, vacuum cleaners, etc. Supplementing this catalog is an 8-page net price list C-29 for the information of buyers.



Studebaker State Sedan, straight eight. A broad body belt extends from cowl to rear quarter; this and the mounting of two spare wheels and tires in the front fenders emphasize the long low appearance of this 1928 model.

Motor Car Finishes at New York Auto Show

General changes to new designs and decorative color schemes are noted at the New York Show, and several "jobs" are described in detail as to color of finishes used. Practically everything now is lacquer

By Geo. D. Hirst, Inc.

THERE is no questioning the fact that one of the outstanding developments in the automobile industry is the emphasis placed on body design and finishing. The silhouette of the car—its outline against a neutral background—is important. A noticeable tendency is to elongate—to round off sharp points and edges—to achieve what artists call "dynamic symetry," which is merely an outline that harmonizes with the purpose for which an automobile is intended, that is to move smoothly. All obstructions are leveled down; all surfaces taper off front to back, and all body finishing complements and carries out the fundamental effect striven for in design.

The finishing of the new cars show a preponderance of pyroxlyn enamels. Paint and varnish jobs for automobiles seem to have been relegated to the limbo of forgotten usages. The familiar story of a surplus supply of high explosives, which peace-time

chemists turned into a lasting and beautiful finish, has never received a more fitting climax than its extensive adoption by practically every car manufacturer. There are a few notable exceptions, however, the claim being made that "perfection cannot be achieved by spraying and that pyroxlyn enamels chip." There can be no question of the trend, however.

Fewer Stripes and Belts

Development seems to be along the lines of very striking contrasts in colors, although certain makers of unquestioned standing show a decided preference for harmony in tones. The two-tone effects of 1926 and 1927, carried out longitudinally, have been replaced on some leading cars by slanting or vertical separation of the two contrasting colors.

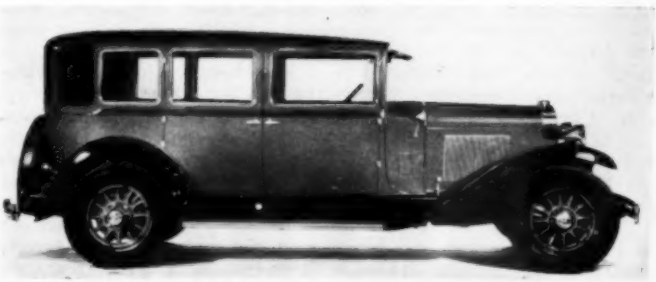
But stripes are few, if any, and the familiar continuous belt, extending from the radiator all the way round the car, has been almost entirely discarded. The "lancehead" pattern appears on some models, sweeping up over the side of the hood, or brought up on the cowl and along the top of the hood in the form of a narrow band. In some instances the window openings are made quite conspicuous by wide reveals in sharply contrasting light colors. Although the common tendency is to break up the body into several units of panels, the effect of the long sweep is retained.

More colors and ornamentation are found inside the car. To give an attractive appearance under the hoods, some motors are finished in lacquer. There is more nickle plating because of the development of "chrome" plating.

On the 134-in. LaSalle chassis is exhibited the seven-passenger sedan in a combination of browns with striping and six wire wheels in cream color.

The Cadillac four-passenger sport phaeton is exhibited in ivory with six wire wheels, the extras carried in front fender wells. Striping is in gold leaf. All nickle parts are brass plated.

The new Chevrolet Imperial Landau is finished in brown with darker brown body beading and gold striping; the coupe and sedan in light green with black body beading and striping in golden yellow; the sport cabriolet in dark gray with green beading and gold stripe; the coach in green with tan wheels and black beading and striping in gold; and



New La Salle 7-passenger family sedan—134-in. wheelbase.

the open touring and roadster in gray with body beading in black and striping in French gray.

Vogue of Tomorrow

The "vogue of tomorrow," as the Hudson organization described it, begins at the very front where the cars have higher and more slender radiators. This effect is heightened by the shutters, which are cleanly patterned and vertical in design. On all cars the shutters are finished in lacquer to match the lower body color.

The Lincoln Judkins-Two-Window Berline is a combination chauffeur and owner-driven car. The model on display is finished in brown, with upper works, moldings, chassis and trunk in black.

The Lincoln Sport Phaeton by Locke is exhibited with tonneau cowl and windshield. A sport top with mahogany-finished bows and nickle trimmings folds back flatly. This car is shown in opal cream with moldings and tonneau cowl of opal brown. The disk wheels and chassis are black.

Greens and Browns Popular

The four-door Moon sedan is finished in a two-tone green color scheme, while the close-coupled sedan is done in a two-tone blue color combination. The sedan on display at the Commodore Hotel in New York is finished in a beige brown two-color combination. Fenders, running board aprons, wire wheels and all body moldings are finished in the darker shades of the two-color combinations.

The Jordan sedan is painted in black and maroon with black fenders, nickled radiator and headlamps and black wire wheels. The Victoria is painted in two-tone brown with fenders and wood wheels painted to match the body and nickled radiator and headlamps. The coupe is painted in gray, with black fenders, black wire wheels, nickled radiator and headlamps.

Locomobile's individualism is featured in the 8-80 line in the De Luxe Brougham—a study in rich browns—with upper quarters, fenders, splashers, and chassis in nutria brown, lower quarters and six wire wheels in Phoenix brown, upholstery of Laidlaw broadcloth.

Attracting interest was the 8-80 Collapsible Coupe in a gray tone, called dawn mist, with pigskin upholstery and five red wire wheels. The five-passenger sedan presents a combination of rapier and monsoon gray, with upholstery of Chase gray mohair.

In the new 8-70 line, the Victoria Coupe presents an unusual design with upper quarters, fenders, splashers and chassis of black, and lower quarters in bowling green with green mohair. The sedan is in maroon.

Apparently shades of brown are to be stylish for well-dressed motor cars in 1928. Greens are good, too. Repaint jobs will naturally fall into these color classes.

Rochester's Automobile Show

Amidst a scene of unrivaled splendor—which really looked as if some master artist had designed the setting—the Twentieth Annual Rochester Automobile Show of the Rochester (N. Y.) Automotive Dealers' Association, held at Edgerton Park, began January 24th and continued

through the week. It was the most colorful event in the automotive show annuals of the Flower City.

Long ceilings, usually bare and drab, were transformed into a canopy of blues and soft pinks which melted gracefully into a frieze-like perspective along the dull walls of the great exhibition hall. Pendent from this colorful heaven of rustling fabrics, were bowers of living green things—four tons from Nature's fields far down in Dixie. These festoons of greens hid clusters of incandescents and, strung along the entire hall, presented a most striking effect.

This show is a thing of daring color, to which tens of thousands of Rochester people journeyed through the snow and storm to witness. The 1928 color isn't any particular color; its every shade and tone that enterprising designers and finishers can devise. One or two models still appear in conservative black and prim blue, but plenty are shown in trim tans.

Gayety predominates, however, and one is almost ready to believe that as color disappears from feminine street clothes, it finds a new outlet in the tone of the family car. Whites, red, brilliant blues and soft greens are in the majority. But salesmen refuse to call them such simple names as those of the rainbow colors. One slim attractive gray sedan might have been considered quite demure until one discovered its coquettish tendencies in wheels of brightest green. Then there was an insolent white creation upholstered in daring red.

Even the lowest priced cars may be had in a wide range of colors. They are changing every year and will continue to change. You can pick your color in cars with the same freedom that you enjoy when selecting a new spring suit—and with just as much of feeling of security.—Arthur J. Owen.

Wood Finishes Must Improve

There are signs of a rebellion against mediocrity in wood finishes. As the lumber associations improve their merchandising methods they are emphasizing the finishing possibilities of their woods.

The mahogany and walnut interests urge shades that bring out the beauty of their woods more clearly, the groups interested in maple are centering their advertising upon the new light brown and gray finishes for it, the gum producers would like to popularize distinctive finishes, and even some of the softwood interests are devoting much attention to the development of appropriate finishes.

Now that the radio is competing with the automobile for the attention of the public, it seems reasonable to suppose that people will again be at home enough to heed the broadcast clamor of the lumbermen and demand beauty in the finish of their furniture and woodwork even as they do in their cars!—F. L. Browne.

New business seldom comes of its own volition. It has to be roped, thrown, and dragged in.

Finishers' Supplies; Catalog

Geo. E. Watson Co., 164 W. Lake St., Chicago, Ill., celebrates its 40th anniversary by publishing and distributing a new catalog No. 48, which contains 120 pages 7x10-in. in size. These pages are devoted to descriptions, illustrations and price quotations of an immense variety of supplies, accessories and equipment for painters, decorators and finishers.

Finishes at Furniture Show in Grand Rapids

Comparing the finishes of furniture on display this year with some shown last year, revealing what improvements are evident and why, and describing certain natural finishes and color schemes that arrest attention and command favorable comment

By J. C. Herstein, Jr.

IF I were to even attempt to describe in detail the various finishes shown at the 100th Grand Rapids Furniture Exposition I could easily fill all the pages in this periodical.

However, it is unnecessary to do this because a large number of manufacturers have not deviated a great deal from their last season's finishes. Color schemes used last season brought success and were also in demand this year as well.

Lacquer Finish Still Popular

Naturally, being much interested in pyroxylin finishes, I was especially glad to note that there is no decrease in the amount of furniture finished with pyroxylin lacquer; in fact some manufacturers, this year, have finished their samples with wood lacquer and lacquer enamels, who heretofore had never used the material. This should refute any skeptic who seems to think that the pyroxylin finishes are not here to stay.

For beauty of design and finish, I believe the furniture shown this year is unequalled. Manufacturers realize that design and finish are almost the prime factors in the sale of furniture.

Improved Lacquer Finishes

Last year I noticed many manufacturers of furniture had work finished with three coats of lacquer—and some even less—and I thought the work looked poor. There was something to be desired—a fullness in the finish was lacking. This year, I am glad to note, they have put on from four to five coats of lacquer and the work is beautiful—slightly more expensive but well worth the difference in coats.

Also, it seemed to me that some of the furniture this year was more carefully finished and that better materials had been used. I do believe that improvements made in lacquers during the past year have something to do with the better appearance of the work, in that the lacquer seems to have much more body. Perhaps the manufacturer realizes that the work must be carefully filled before applying the lacquer; this may seem to be an old story to all of us, but it is true nevertheless.

A large amount of furniture finished in American walnut was shown this year. This finish, when properly put on and rubbed out, is always attractive and remains so—with a high-grade lacquer finish to protect it.

Popular Color Schemes

Especially pleasing was a group of breakfast suites finished in enamel. The color schemes or combinations which seemed to be the most popular were antique ivory shaded with blue, blue

shaded with old gold, and old oak attractively high lighted. According to the manufacturers, the old oak finish is selling the best. No doubt beauty combined with durability is enough reason for buyers to prefer the latter finish.

Quaint American furniture was shown in a large variety of color schemes. The dove gray, robin's-egg blue and green are still leading sellers, as they have been for the past five years or so.

Lacquer enamels are coming to the foreground rapidly, as did brushing lacquer. They are especially desirable to use because they give a sheen that is neither dull nor glossy and this seems to be what the public in general wishes to have. Besides this, they are extremely durable and will resist hard wear.

The two pieces illustrated at the top of this page were among the finest creations exhibited at the 100th Grand Rapids Furniture Market.

The side chair is part of a 17th Century Dutch dining room suite. It is highly lacquered in green over painted decorations. This piece, with cabriole legs and claw-and-ball feet, shows a strong Chinese influence, from whence the motif was borrowed.

The other is a William and Mary pattern consisting of an "old gilded box" with decorations in color, on a carved walnut and cherry burl stand. The interior of the box is silver luster lacquer with decorations on the doors. The mounts are shaded old brass. Height 67-in., length 50-in. and depth 22-in.

Custom Shop Needed for Special Finishes

An article in the December issue, entitled "Color Variety Needed to Sell Furniture," attracted my attention and impressed me as being wholly true. Most furniture dealers carry only a small line of color in stock; this does not correspond with the present day colorful world. Every home of taste must have its furniture, hangings, rugs, etc., to harmonize in color. In most cases the buyer has a very hard

job on hand to get color in furniture to do this.

It is partly up to the manufacturers to increase their variety of color schemes. Of course, there are a few makers of fine furniture that make up suites or odd pieces in any color that the buyer may choose. But the price is very high for doing this special work and, where decorating and special colors are used, a 20 to 25 per cent additional charge is made.

This shortage of color in any local furniture store prompts the idea of the up-to-date custom shop. The operator of this shop can carry hundreds of colors and make it his specialty to match any color scheme, rug or whatever it may be, at a great deal lower cost than the furniture manufacturer could carry half the number of shades, tints and hues.

There is some furniture sold in the white today, and home owners are buying more and more of this goods and having it painted at home.

Recently I painted a suite for a lady who had looked in vain in various stores in New York City for just a certain shade. It could not be found, so she bought her articles in the white and had the work done to suit her own particular wish. She was willing to wait to get what she wanted and was also able to drop in and make any changes in color decorations that she chose.

In my shop I am also painting a large number of breakfast-room suites and other articles for local furniture stores, in colors that cannot be bought. There is an opening in every city for first-class custom shops, with the present-day lack of variety colors in the furniture field.

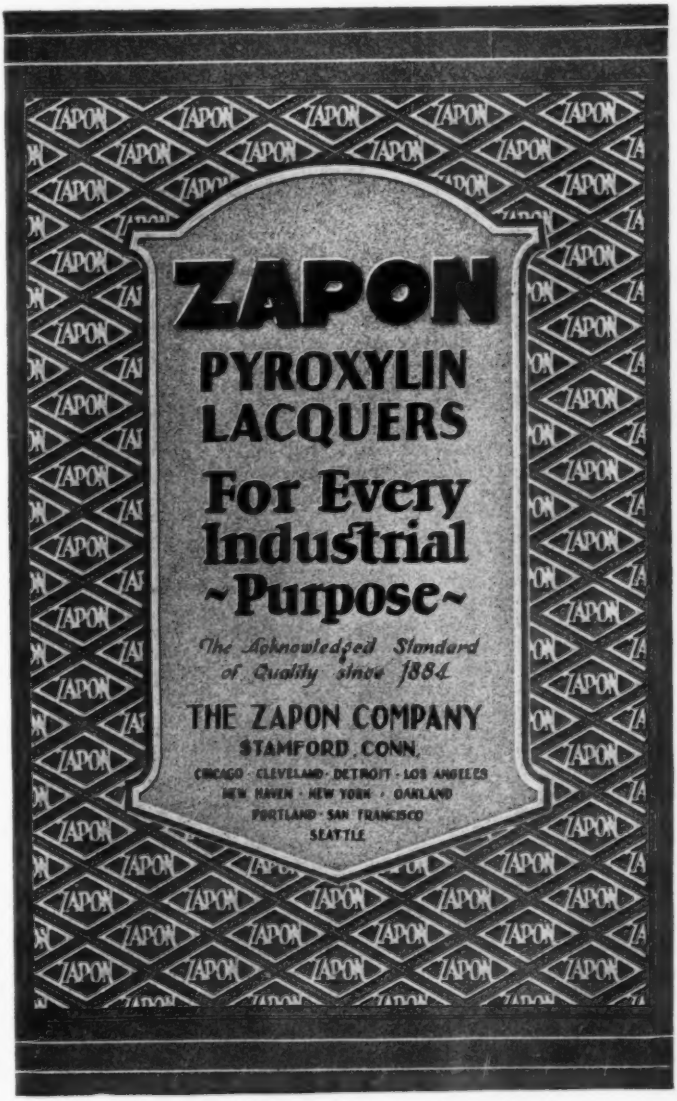
One need not wait long for a special finish if the shop is equipped to do a lacquer job. Most any woman is willing to wait a few weeks if she can get the work done as wanted, in any color she may choose. I would be pleased to see articles and suggestions on the operating of custom shops from other owners, through INDUSTRIAL FINISHING. —J. K. Cooper.

Materials for Dip Finishing

In order to keep paint from settling in the dipping tanks, either an agitator in the form of a revolving screw is provided within the tank, or the paint must be formulated or ground in such manner that it will not settle hard on the bottom of the tank. Generally, agitator tanks are used for the cheaper heavy paints containing an excess of barytes, but the paint may be held in suspension without the use of an agitator if the pigment contains a proper amount of asbestine, which is one species of asbestiform mineral reduced to a fine and fluffy fibrous pulp, very light in gravity.

The limit for asbestine in a brush paint, which should not show brush marks, is five percent, but in dipping paints a greater amount may be used, as the paint will flow out perfectly. Whiting is another pigment which is used to a great extent in dipping paints, chiefly for increasing the thickness of the paint film.

More customary now than in the past, dipping paints are supplied by the manufacturer in liquid form either ready for application or only requiring the addition of oil, varnish, or other


ZAPON
PYROXYLIN
LACQUERS
For Every
Industrial
~Purpose~
The Acknowledged Standard
of Quality since 1884
THE ZAPON COMPANY
STAMFORD, CONN.
CHICAGO · CLEVELAND · DETROIT · LOS ANGELES
NEW HAVEN · NEW YORK · OAKLAND
PORTLAND · SAN FRANCISCO
SEATTLE

diluent in specified proportions, but some producers — notably manufacturers of agricultural implements—adhere to the practice of mixing their dipping paints to the proper consistency by reducing a weighed amount of paste color with benzine, oil, etc.

From one to two gallons of benzine per gallon of paste color is the quantity generally used for a flat dipping paint, but when the thinner is made up of benzine, oil, varnish and japan drier, considerable more thinner will be needed, due to the fact that oil and varnish, having higher viscosity, do not possess as much thinning property as benzine.

As a rule, all paste paints, when properly ground, are reduced to dipping consistency in accordance with their volume, irrespective of their weight; for instance, one gallon of paste weighing 22-lbs., thinned with one gallon of benzine, will have approximately the same consistency as a paste weighing 12-lbs. per gallon when thinned with the same quantity of benzine.

Dipping primers for iron work should not contain too much oil, but should contain a small quantity of varnish to harden the film and make it adhere. On the other hand, primers for soft wood must contain sufficient oil to allow for the absorption of the thinner by the wood; otherwise, when dry, the paint will soon chalk off.

To insure a nice job of dipping it is essential that the paint be properly mixed, and that the pieces be set up or suspended in such a manner that the paint will drip off and not leave sags or fat edges—and also not wrinkle. Wrinkling is generally due to too much oil in the presence of the japan drier.

Dipping varnishes are sometimes prepared by diluting the ordinary rosin-and-China wood oil varnishes with one-fourth or one-third their volume of benzine, but this is not recommended; advisedly the consumer should purchase, for his particular requirements, the right character of varnish ready for usage.

In automobile factories some of the small parts are dipped, as also are the wood floor boards and running boards, the fenders and frequently the primer on wheels, but the bodies and the large pieces are sprayed. Of course, wherever nitro-cellulose lacquer is used, spraying is the means of application, except in some plants the striping is done with a special brushing lacquer.—E. Perry.

Skimping the Finish

This is a common expression greatly used by manufacturers of furniture, toys and other products, and it is often put into practice to the manufacturers' sad misfortune. When figuring the cost of manufacturing, temptations arise; the manager usually begins to think of "skimping the finish", which is absolutely wrong. As the old saying goes, "Don't spoil the building of the ship for a barrel of tar." Start your product right, then finish it right; by all means, do not skimp the finish. —Joseph Cowan.

Boomed by Lindbergh and others, airplane sales of 675 planes in the five months preceding Lindy's Paris flight increased to 1,100 during the next three months. Factories have been overtaxed; no serious reactions have been felt from the failures which have followed.

IMPERVIOUS PRODUCTS

Baking Enamels and Japans
Finishing Varnishes
Protective Coatings
Pyroxylin Lacquers

Specially made for finish of

UNIFORMITY
QUALITY
PERMANENCY

An Impervious Varnish, Japan or Lacquer is especially made for a specific purpose for finish on Iron, Steel, Aluminum or Wood.

We maintain a complete and practical baking, spraying and finishing department with trained operators for demonstrating and to assist in solving problems of baking, spraying or finishing your own products.

IMPERVIOUS VARNISH COMPANY

Manufacturers Industrial Finishes

General Office—421 Wood Street
Pittsburgh, Penna.

"The first part of this article may be a bit unusual for a finishing magazine, but in view of the nation-wide discussion over the business outlook for 1928, I think this will not be out of place."—
Fred Mannhardt

Every Detail a Selling Point

What it will take to get business during 1928 and why it is increasingly essential to look upon every detail as being vitally important in establishing sales values and building permanent good will

By Fred Mannhardt

ROGER BABSON, in his summary of business conditions for 1928, says some will find 1928 a better year than 1927. Such concerns will be those which diligently attend to business, cut costs to a minimum, push sales harder than ever, and "Render truly better service to all."

To me the last sentence speaks volumes; it's the key of the whole proposition, and holds more meaning than a superficial reading gives you. It goes deep. It is just this attitude that gave Henry Ford his wonderful success.

A good buy at a fair price, smaller profits, more sales; consequently more employment, hence more money in circulation.

It seems to me that one does not have to be a financial wizard to see the truth of Mr. Babson's observations. Let a good buy at a fair price have precedence over a poor buy at a big price.

Close attention to every detail is important.

All Selling Points

Too many manufacturers seem to hold to the idea that the big selling point about their goods is its looks. Others feel that it's utility. Why the diversity of opinion? Does it ever appear to them that the entire business from the smallest part up, is the biggest selling point they could possibly obtain? A beautiful paint job on an automobile will not win for it an endurance run —no more than a poor engine in it will.

Gone are the days in America when shyster sales predominated. Order takers are rapidly passing out. Keen, honest, professional salesmen have filled the gap and they must be backed with the goods. The people know how far their dollar will stretch and that

a dollar now days must be made of the "stretchiest stuff.".

Get away from looking at a job as a whole. Make the smallest detail a masterpiece. Inject harmony into construction and finish. In the finishing end, art is becoming a bigger factor day by day. In fact this may be called the color age. Even to signs, their import is a portrayal of salable goods by pictures. Automobiles are largely responsible for this, as signs are now passed too rapidly to be read. A picture tells the story in an instant.

American people are rapidly awakening to the fact that art means more to them than it ever did. Its beauty and educational values; its remedial value of physical disorders.

Results of Research

The durability and permanency of the present day finishes is not a thing that just happened; it is the result of scientific research by our most skilled chemists and can be applied in almost any way.

More and more will colors be used in the finishing of furniture—this for a number of reasons. One of the big reasons is the scarcity and high price of the better grades of wood. I do not advocate the painting of a beautifully-grained piece of wood, for wherever you try to do that you are getting something not so good; but where a plain piece of wood is concerned, and yet a nice finish is desired, painting, enameling or color lacquering is the thing.

Present day painters and finishers have a bigger stack of cards to draw from than the old timers had. What wouldn't some of the older fellows have given for a magazine like INDUSTRIAL FINISHING, where they could "swap" ideas and experiences, and know that when they bought anything advertised in this up-to-the-minute magazine, that they were getting honest goods at an honest price?

Here's to better service, and bigger business for 1928!

Stains Under Lacquer

Until the advent of nitrocellulose finishes most of the wood staining was done by using oil or spirit dyes. In the case of high-grade finishes, especially where permanence to light was of importance, water stains were found most satisfactory. The use of lacquers soon showed that many oil and spirit stains were unsuited for this class of finishes.

Aside from the fading effect of light, lacquer finishing brought up another problem which was even more serious and is best described as bleeding. Bleeding is in reality solution of the dye in the solvents used in compounding lacquer. This effect can be somewhat reduced by the use of shellac, but this often involves sacrificing some of the advantages of a lacquer finish. It has therefore been the accepted practice to recommend the water stains for use with lacquer. Although the disadvantages of water stain have been appreciated, nothing practical has as yet been developed to supplant this type of dye for use with lacquer.—S. M. Silverstein.

Willow Furniture Colors

At the Grand Rapids Furniture Show, there was on display a complete new line of willow-stick style furniture in color combinations of black and orange, red and green, black and green, and orange and brown.

Colors, Designs and Finishes at the N. Y. Automobile Show

Revealing what body designs, color treatment and colors are now popular, as noted by a careful observer at the New York Automobile Show

By R. L. Masterson

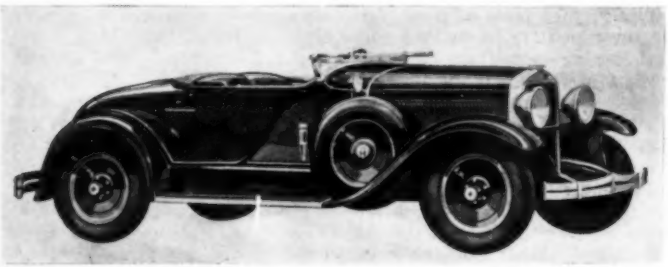
THE PHRASE, "There's nothing new under the sun," was coined before the 28th Annual Automobile Show at the Grand Central Palace, New York City, had opened its doors to the public on January 7th, 1928. Never before has an automobile show had so much that is new. New mechanical features, new body lines, new styles of painting, new colors and many other new things were to be seen wherever one cared to look. Every exhibitor had much that is new and interesting to show to the multitudes which thronged the exhibit from opening to closing time each day.

Very Little Black

Taking the show as a whole the first thing that made a decided impression was the absence of black, dark blue, or other somber colored cars; not a single all-black car among all the exhibits. The nearest to an all-black car is a special job shown by Nash, which is far from somber, due to a liberal use of cream color on wide mouldings and wire wheels. Black is also almost entirely absent as a color for the upper structure of closed cars, which is in sharp contrast to the custom one or two years ago of painting the upper structure of practically all closed cars in black.

Black is used very interestingly on several models to produce unusual panel effects, perhaps the most bizarre of which is a four-passenger roadster by Elcar. The lighter portions of this car are painted in a peculiar yellow shade, richer than a cream and not quite as bright as canary yellow. The body panel is in black with a cream stripe running around the black panel, about an inch from the edge.

While black was noticeable by its absence, it is not possible to



New Hupmobile two-passenger "Sportster" with rumble seat; custom equipped. Striking new color designs and color combinations feature this 1828 model.

!

A most unique and distinctive finish!

Pioneered as a leatherette finish for radio horns, its variety of attractive combinations has brought it into use for many other articles, such as radio cabinets, furniture, fixtures, novelties, toys, etc.

Ease of application—uniformity of pattern—combinations to suit your particular requirements, are outstanding qualities of BREVOKRAK.

Thorough-going demonstration made at your plant if desired.

!

WAUKEGAN CHEMICAL COMPANY

"Values That Endure"

WAUKEGAN, - ILLINOIS

Northwestern Representative
CAPSER LABORATORIES
611 Ryan Bldg., St. Paul, Minn.

BREVOLITE lacquers and lacquer enamels for the wood finishing trade are hard wearing, good covering materials.

The "Victory Six" of Dodge Bros. Notice new design below windows and new cadet visor above windshield.

say there is any definite trend in the colors used, unless it is in the use of more contrasting and unusual combinations. Colors run the entire range of the spectrum. The impression was obtained that warmer tones are more in evidence than ever before. These include ivory, cream, yellow, buff, brown tones of gray, fawn, brown, burnt orange, red and maroon.

However, almost an equal number of cooler tones of green, green-gray, green-blue, etc., are in evidence. Blues, as we knew them a year or so ago, are almost entirely absent. The blues that are used are either toned to a lighter tint with white, or mixed with green or other colors to produce odd hues.

Warm Colors Popular

A sort of dull salmon, tangarine or burnt orange is a new color shown on four or five jobs. Among these is a Durant "75" brougham. The darker, front portion of the car is maroon, while the main body, shown as the lighter portion of the car, is painted in the new burnt orange shade. Striping is maroon, the fenders are black and wire wheels are burnt orange. Two extra wire wheels with tires and tire covers are mounted in fender wells on either running board. This extra wheel hides to some extent the forward sweep of the light colored body panel as it meets the splasher.

Very similar shades of burnt orange are used on a Cunningham Coupe, painted all over in this new color with reddish brown fenders and mouldings. Gold striping is used to harmonize with the burnt orange and to enliven the reddish-brown color. Two Gardner models are of this color. A sedan is painted all over with burnt orange, set off with black panels on the doors, black striping and black fenders. The other is a sedan with ivory body, burnt-orange door panels, reveals and disc wheels. Moon also had a roadster in burnt orange with black mouldings, fenders and arrow-head panel on the top of the hood.

Another rather unusual color combination and method of showing it is found in a Hupmobile Six, two-passenger sport roadster. The front half of the car is

NIKOLAS LACQUERS

SINCE 1890 we have made only superior quality lacquers, because inferior quality is alway disappointing, no matter how cheap it may be.

No great success was ever made with an inferior product. That is one reason we don't make it.

G. J. Nikolas & Co., Inc.

1227-35 Van Buren Street
CHICAGO, ILL.

Branches:
33-35 Grand St., Brooklyn
1150 Venice Blvd., Los Angeles
73 Main St., San Francisco

Ask for our Beautiful Color-Card. Free.

painted in a pleasing, soft shade of green. A black moulding runs along the hinge line of the hood, broadens out at the windshield post and divides into two parts, one of which continues around the top of the body and the other cuts diagonally downward in a sweeping curve across the door to the splasher, dividing the rear deck and side of the body from the front portion. The rear deck and side are painted in a warm yellow, almost bordering upon orange. Fenders are black and disc wheels green with yellow striping. A monogram and Hupmobile shield decorates the green portion of the door.

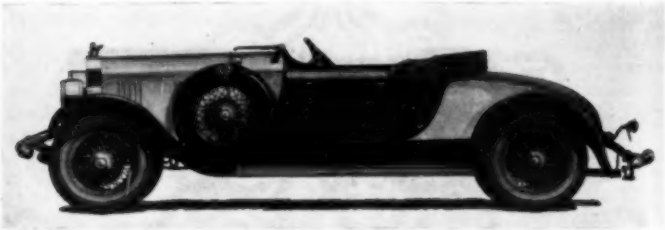
New Designs Featured

The former style of painting two-tone jobs with the dividing line running along the side hinge of the hood, so the top of the hood has a different color than the side of the hood is almost entirely absent from the show. Nash and Jordan each have one car on exhibit painted in this fashion. All other cars either have the hood painted all over in one color or the dividing line is in sweeping curves formed by raised panels stamped into the top of the hood to form a so-called arrow-head design, as shown by the illustration of the Oldsmobile Six two-door sedan.

Similar arrow-head panels on the top of the hood are shown by Gardner, Erskine Six, Cadillac and La Salle. One Cadillac which shows a double arrow-head effect is a town car painted black with contrasting panels of polished bare aluminum. Auburn, contrary to its former custom of painting, did not display any cars with a contrasting color above the diagonal mouldings on the hood which form an arrow-head at the junction of the hood with the radiator shell. The mouldings are painted in a contrasting color but the remainder of the hood is in one color.

Cadillac, Packard and Chrysler show sport touring cars which have the new feature of a partially enclosed rear compartment, which is hinged so as to be raised up when passengers enter or leave the rear seat. Each of these cars is fitted with folding windshields attached to the lid or cover of the rear compartment. The Cadillac model is undoubtedly the most elaborate car on exhibit. It is finished all over in ivory, including extra broad, massive, full crown fenders. All metal trimmings are brass or gold plated and the striping on the ivory is

(Continued on page 113)



An Elcar Eight, 4-passenger roadster, in striking new color design.

Pee Gee

FLAT LACQUER No. 71

Flows smoothly and produces a rubbed effect just as sprayed. The degree of lustre is easily regulated by the addition of Pegex Clear Lacquer.

Send for free sample

PEASLEE-GAULBERT CO.

Incorporated

Louisville, Kentucky

VARNISHES STAINS FILLERS
LACQUERS ENAMELS

Plant Manager of Leominster (Mass.) Novelty Corporation describes some special custom work, calls attention to problems involved and explains how production is planned in advance and how equipment is arranged to produce satisfactory results economically.

Special Fixture Finishing

By E. J. Nettel

OUR business is perhaps unusual when it comes to the finishing of fixtures, due to the fact that we do not manufacture any stock items. Ours is a highly specialized business; we make and finish fixtures to meet each individual manufacturer's own ideas as to displaying his particular merchandise in the retail store. By this I mean that each order we put through the plant differs greatly as to design, construction and finish.

Our finishing department, consequently, is laid out as efficiently as possible to meet this unusual condition.

We run a battery of four spray booths. Material from the mill-room is delivered to the finishing room ready for the sealer or stain coat. In some instances, the material is delivered "knocked-down," and in some cases set up. By this you will see that a lot of personal supervision is essential to obtain the best results at lowest cost.

Color Panel Signs

As color panel signs are one of our biggest finishing room problems, therefore I will discuss this factor of the business. These panels are milled out of hardwood with a convex surface on one side and a flat surface on the other. The convex surfaces are sanded on a belt sander to the smoothest possible surface and are delivered to the finishing room in boxes. These panels are then racked up on special racks with 15 to 25 panels on a rack, and delivered by trucks to the clear-lacquer spray booth.

Here the spray man sprays each panel as racked with two coats of clear lacquer for a sealer coat. This spray booth is equipped with a modern spray gun, with the light directly over the turntable and an electric fan exhausting directly outside.

After the two coats of clear lacquer have been applied, the panels are then unracked and sent to our polishing room in boxes where they are buffed to a glass-like finish. They are then racked again and delivered to the color booths for the final coats of color lacquer enamels. Each of these two booths is also equipped with a light directly over each turntable and an electric fan exhausts directly outside. After these color coats are properly applied the panels are again buffed, or dimmed as the order requires, and sent to the assem-

Berryloid has three points of advantage
THE PERMANENT
BERRYLOID
HIGH LUSTER LACQUER
There are three places where Berryloid shows its outstanding superiority
In the finishing room—It effects worth-while economies and speeds production to a surprising degree
In the salesroom—The surpassing beauty of products finished with it tears down sales resistance and stimulates demand
In the hands of consumers—Berryloid's exceptional durability increases pride in ownership of articles finished with it
for complete information address Industrial Department
Lacquers
Walkerville, Ont.

bling room by truck in boxes with proper protection to the finish.

The above is only one of our finishing department problems. We also maintain a spray booth for bronze work only. This is an all-metal booth equipped with a modern type of air brush and 5-gal. container with agitator and electric fan exhaust.

Use Oil Stains

We also do a lot of mahogany and walnut finishing on special fixtures. We use an oil stain to eliminate the expense of sanding the rough surface which a water stain always raises. Of course, by doing this we are unable to obtain a mahogany finish that will not fade when placed in the sun's rays directly behind glass.

This is our biggest and most serious finishing problem, since, naturally, our display fixtures are placed in windows, etc., where the sun hits them through glass, and we get the complaint of fading. A water stain will overcome this somewhat but not entirely. Consequently, we have stuck to the oil stains owing to the excessive costs of using other materials in the finishing process.

Another problem confronting the finishing department is the fact that when finishing mahogany or walnut stained work at the same time color enamel work is going through, strict supervision must be had as to their handling, to avoid any of the enamel work—especially the light colors—from being spotted with red.

This is caused by spraying with the air brush, any mahogany stained surface; the air blows the loose particles into the air and these loose particles—too minute to even see with the naked eye—seem to have the power of traveling and dropping just where they are not wanted. Once these particles land on any color enamel work, it is impossible to remove the discoloration, as the stain clinging to these particles penetrates "to the nth degree."

Production Planned Ahead

Our foreman finisher is advised the minute an order is placed in the millroom, as to the delivery date of that particular order. The mill foreman, in turn, advises the foreman finisher the approximate date he will deliver the material to the finishing department. By this method, the foreman finisher is enabled to route his work most efficiently to take care of the orders that are coming along to him for finishing.

Of course, the fact that we are not a large concern enables us to do this effectively without much confliction. There are times, however, when our orders come so that the color work bunches up on us through lack of proper time for finishing. When this occurs, which is seldom, personal supervision between myself and our foreman finisher is necessary to get the best results.

From the above it can be readily seen that fixture finishing brings up many problems peculiar to the design and construction of each fixture. Many of these problems are worked out and solved when we make up our original sample fixture, so that when the fixture reaches our finishing department, these problems are readily taken care of, thereby avoiding unnecessary delay and the bunching up of work in the finishing room. It is necessary to do this in our particular work where no two jobs are alike.

Our staining is all done on a separate floor and in a room

Tuff!

"No Tampering with Quality"

TOUGHNESS is one of the outstanding "two-fisted" qualities of Rockford Varnish Company lacquers.

Hard as granite, yet sufficiently pliant and elastic to withstand sudden blows and heavy weights—these distinctly superior lacquers have won for themselves a veritable "Lindbergh" of popularity in the industrial finishing field.

Have you tried them? It's easy to make a test—and there's no obligation. Why not write today?

The
ROCKFORD VARNISH
Company
ROCKFORD, ILL.

away from all high-class color work. Each spray booth is located in a separately enclosed room, these rooms being large enough to properly take the necessary racks, trucks, etc., so that the spray man can handle his work without any lost motion.

Oil Stains; Lacquer

On high-grade finishes water stains must be used, but on some of the cheaper lacquer finishes several manufacturers are apparently using oil stains with some success. Aside from bleeding and fading problems, which in these instances are apparently not important, there is another problem which must be considered.

Some oil-stain finishes are subject to peeling; this is in most cases due to the residual oil, which prevents good adhesion of the lacquer film and also tends to ultimately soften the film. This effect can be overcome by careful control of the solvents used. These solvents should be of low volatility and leave no residual wax or grease.

Peeling, in some cases, may also be due to too smooth a prepared surface. In other words, while the grain raising encountered with water stains is undesirable, a certain amount of this action tends to produce a surface into which the finishing films can get a grip and thus adhere more tenaciously. The peeling effect can be reduced to some extent by slightly warming the surfaces to be finished and thus getting somewhat better penetration than at room temperature.

At any rate, it is safe to state that most peeling troubles can be overcome by checking up on the boiling point and residue of the solvents used. The amount of bleeding normally encountered when using oil stains has been measured in a dipping process and found to be approximately 6 percent of the amount of color originally present in the wood. Walnut and mahogany stains do not differ appreciably in this respect.—S. M. Silverstein.

The most conspicuous success in surfacing mediums is found in the field of waterproof sandpapers. This applies particularly to the use of these papers in nitro-cellulose finishing at all stages of the work.

To The Editor

Sitting here at home tonight,
We are thinking, sir, of you,
And of Industrial Finishing
And of Room No. 502.

Before us on our desk
Is your valued magazine.
It's the January number
And the best one we have seen.

We note that it is larger
Than it ever was before,
With its many extra pages
We enjoy it more and more.

We're glad that you are growing;
Yes, sir, we rejoice with you,
For you see we feel that somehow
We are growing with you, too.

Growing wiser with you monthly,
As your magazine we read;
Growing into better workmen,
It's a friend to us indeed.

As its pages we are reading,
We read what's good to know;
So in knowledge we are growing,
This is how with you we grow.

You are helping us a lot, sir,
Both you and your magazine;
As a helpful publication
It's the best that we have seen.
—John A. Twamley.

F. M. Beegle Advanced by Cleveland Varnish Co.

F. M. Beegle, for the last two years in charge of production and certain sales activities of the Cleveland Varnish Company, Cleveland, has been made general manager.

Spray Finishers

HERE'S THE GUN YOU'VE ALWAYS WANTED

Light Weight
Fewer Parts
Well Balanced
Rugged Construction
Simple Adjustments
Removable Packing Cartridges
New Principle of Atomization
Clogging Practically Impossible
Uses 40% Less Air in Operation
Guaranteed against defective workmanship and material

Order Today and Start Cutting Your Production Costs

The Hopkins Spray Equipment Co.

2407 N. Crawford Ave.
Chicago, Ill.

448 Larkin Street
San Francisco, Cal.

"These are a few of my notes which might be of help to a finisher."— T. R. Hall.

Common Lacquer Finishing Faults —and Their Remedies

Foreman Finisher, writing from experience, explains the causes of dry spray, pin holes, blushing and unclean work, and tells what can be done to avoid these faults which cause so much trouble in some finishing departments

By T. R. Nall

ASSUMING that all good grades of furniture lacquers are correctly applied, there should be no complaints or unsatisfactory results. However, since errors are not always avoidable, there are a few minor and more or less characteristic faults that should be kept in mind when using modern furniture lacquers.

Dry Spray

Dry spray is that sandy appearance on the surface, caused by lacquer from the airbrush hitting portions of the work which it was not intended to coat at that time. For instance, in spraying the legs of a table, while spraying one leg some lacquer may hit the leg on the other corner and there solidify in drops, instead of flowing out smoothly.

The remedy for this is to spray the article in such a manner that any spray dust will fall on portions of the surface which has not already been coated; then, when the lacquer coat is applied, the dry spray will be redissolved and will flow out smoothly.

Pin Holes in Finish

Pin holes in the finish are due either to improper application of the lacquer or to improper filling. If the pin holes are present only in small numbers and are directly over the open pores in the grain, the trouble is due to an improper filler which is affected by the lacquer, or to a hole in the grain which was not completely filled by the paste wood filler. If there are a large number of pin holes and they are not distributed with particular reference to the grain of the wood, they are caused by air becoming entrapped in the lacquer film during the spraying operation.

There is no one cause for this occurance (air entrapped in the lacquer film). I submit the most likely ones as follows:

1—Lacquer applied too heavy. Add more thinner.

2—Improper handling of the spray gun. Keep the gun pointed directly at the work and in constant motion. On table tops, etc., shoot off the edges at each end, or cut off the fluid supply.

3—Spray gun out of adjustment.

4—Too much air pressure for the particular lacquer mixture being used.

Pin holes, due to air bubbles in the lacquer, can be noticed on close examination before rubbing. They are more apt to become apparent, however, after the job has been rubbed and the tops of

Invite us to show you

Sun Flat Lacquer

We will display our goods at our expense, and give you practical advice. How best to use.

White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.

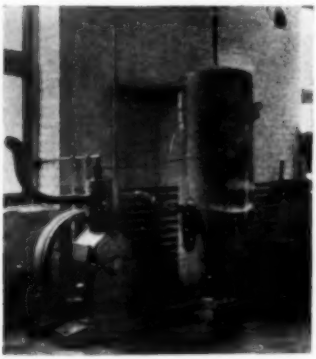
the air bubbles are cut off, thereby leaving holes in the finish. These holes are first filled with pumice and oil and as the oil disappears, each hole takes on a white cast.

Blushing

At times during the summer months when the atmosphere is heavy with moisture, a furniture lacquer may dry with a whitish cast instead of being clear and glossy as at other seasons of the year. This is caused by absorption of moisture by the lacquer during drying.

Satisfactory results are also due largely to the equipment used during the process of finishing articles. A good finish depends not only on the quality of the lacquer, but also on the spray operator and his equipment. A capable sprayman can turn out more work in a day, and the quality of the work will be higher than that produced by an operator using varnish with a hand brush—or even a spray.

It is money well invested to supply the spray operator with good working conditions. By this I mean that spraying should be done in a place where there is adequate illumination and ventilation. Proper lighting will result in more even application of the lacquer and the spray operator will be able to see whether his material is flowing on correctly, making any adjustments that are necessary. Correct ventilation will result in a clean job, free from spray dust.

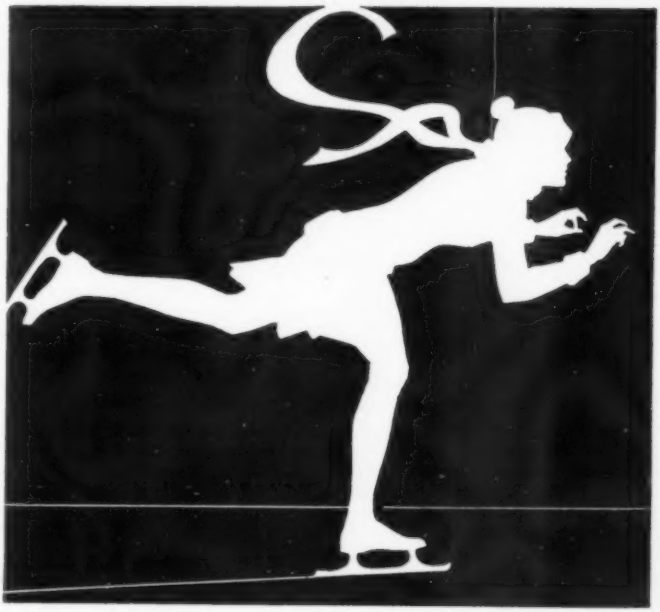


An adequate supply of clean dry air is essential in spray finishing. Compressors must be ample in size and kept in good order.

Spray Equipment

A generous size spray booth is necessary, with proper provisions so that dry lacquer will not accumulate on the top and later drop down on the work. Spray equipment should be carefully selected with a view to the particular requirements of the job. The air supply must be dependable and provided with such pressure regulators, oil and water separators, etc., as are necessary. Too much importance cannot be attached to the selection of the proper equipment, for upon this selection largely depends the success of results you will obtain with good quality lacquers.

If the sprayman will sprinkle oil on the floor in front of the spray booth and also on the spray-booth floor, before starting his days' work, this will eliminate a lot of dirty work. Also, before he quits work at night, he should clean out all the hose. Do not let any lacquer or any other solvent stand in the hose over night; it causes the rubber hose to decay and small pieces fly out on the work. It is not advisable to use lacquer which has remained in a spray bucket over night, as it changes its color—both clear and lacquer enamels.



The Sheer Joy of Progress

Moving ahead with your finishing problems—without friction and without undue effort—that satisfaction is yours when you are guided by the recommendations and assistance of Glidden service. The experience of fifty years of knowing how is at your disposal. Let us fit this knowledge of materials and methods to your practical every-day problems.

GLIDDEN
EVERYWHERE on EVERYTHING

The Glidden Company National Headquarters, Cleveland, Ohio

Wood Toys at Seattle Show

Notes from the Toy Show held last month in Seattle under the auspices of the Toy Makers' Guild of Washington; many toys of wood—some finished and some unfinished—were exhibited

By C. M. Littlejohn

AN exhibit of toys for tiny tots made from the great forests of the Pacific Northwest was held in January at the Olympic Hotel, Seattle, under the auspices of the recently organized Toy Makers' Guild of Washington, a group of plants which specialize mainly in wooden toys.

This exposition attracted considerable interest that transcended the local boundaries of the city, for several of the leading toy makers have already found national and international markets for the well-made toys from Northwest woods.

More than 30 toy makers are now producing playthings in the state of Washington alone. These popular items—sold all over the world—are made principally of the native woods of the richly endowed "Evergreen State." Some of the toys are made from the by-products of mills, as for instance, the interesting little bow-wow—a new number of a Tacoma factory—which mutely answers and looks askance to the name of "Tillicum Pup."

Variety of Playthings

Among the many playthings are boats of every type, from the light canoes that bring back the vanished Indian days of the Pacific Northwest, to the armoured cruisers, the sailing ships, and private yachts; also auto trucks, oil tanks, lumber trucks, autos, coasters, skates, dolls, of every type, alone, and in whole families, skooters, stilts, doll chairs, tables, and houses, sewing sets for little girls. For that great pastime of archery, which is again coming into its own in the Northwest, a spirited interest is shown in the manufacture of bows and arrows from yew, hickory, cedar, and other types of wood.

Ideas for Designs

According to recent statistics it is shown that the United States produced $75,000,000 worth of toys, as compared with half this amount by its closest rival, Germany. In the toy makers guild, however, is a newcomer from Germany—a German toy manufacturer who has settled in Tacoma, and started a woodworking plant for the manufacture of toys created to serve American children.

This is K. H. Evers, who established the Pacific Toys and Novelty Manufacturing Co. at Tacoma, after following toy manufacturing in the old country. He carefully watches the desire of American youngsters for new playthings, and draws an original toy idea from the American environment and the impulse of the moment; such is his walking "Felix," which has proven one of the most interesting of his 25 different numbers, made principally of wood.

Toys in Color

While most of the toys of the various exhibitors at the recent

. . . Improved
OPEX LEATHER LACQUERS

produce *improved* finishes

IMPROVED Opex Leather Lacquer . . . Opex Leather Lacquer Stain . . . Opex Clear Leather Lacquer . . . reduce the problems of finishing leather in color. This is particularly important today when the demand for radiant color creates a profitable field for more permanent leather finishes.

Note these advantages of finishing with Opex Leather Lacquers. Figure how the lower production costs and superior grade leather products will help profits mount.

Opex Leather Lacquers create a washable finish.
Opex Leather Lacquers penetrate enough to adhere properly, yet do not stiffen the leather.
A dampened cloth removes grease spots, water marks, soil of handling.
The leather grades uniformly high in perfection of finish, beautiful lustre, and durability.
Speedy drying and easy applying reduce the time element.
Chrome tanned leather gives the appearance of vegetable tanned leather.

Let our demonstrator explain in detail the advantages of Opex Leather Lacquers in your finishing business. Mail this coupon for fully descriptive literature.

THE SHERWIN-WILLIAMS CO.
Cleveland, Ohio

The Sherwin-Williams Co.,
409 Canal Road, N. W., Cleveland, Ohio.
Send me complete data of Opex Leather Lacquers.
Business title .....
Address .....
City .....
State .....

OPEX LACQUERS

toy show were painted or finished in a blaze of color, others were unfinished, their surface being left bare with the grain of the wood revealed, as they waited for their coat of paint.

—and Unfinished

This is due to the fact that in Seattle, and other parts of the Northwest — perhaps throughout the country—there is a certain vogue or fashion for painting articles for the home after they are purchased. There is manifest an urge on the part of the average citizen to wield a paint brush in the decoration of little articles about the home.

For this reason certain toy manufacturers cater to this new sentiment and leave their products bare, the woodworking "in the white" completing the job which formerly required painting or some finishing application. Such articles include children's furniture and little tea sets and benches, made of three, four and five-ply Douglas fir. Those who buy the articles like to paint them to fit in with a definite color scheme, to give individual treatment in the matter of decoration, and create a new harmony, without discordant contrasts, in the home.

Mixing Stains for Wood

Foreman Finisher calls attention to the different kinds of stains, tells what precautions to use in mixing them, emphasizes the importance of keeping a record of each "mix" and submits a few stain formulas

By John A. Twamley

THE SUBJECT of wood stains is quite confusing, until you fix the various kinds of stain clearly in mind; then it becomes quite simple. Stains are usually classified as follows:

Spirit stains.
Acid or chemical stains.
Water aniline stains.
Water pigment stains.
Oil pigment stains.
Varnish stains.
Aniline penetrating stains.
Oil pigment penetrating stains.
Oil aniline stains.

When you are mixing acid stains, you will find it necessary to wear rubber gloves, while handling some of the acids. Sulphuric acid, nitric acid, muriatic acid and others will burn the skin and clothing. Also chemicals such as ammonia, potash, caustic soda, etc., must be handled with care in order to avoid injury to person and clothing.

Whenever it is possible after mixing, let any stain stand for a day or more. This matures the stain and insures better results. All stains must be mixed by weight or measure; then write down the amounts of the various ingredients—this, in order to be able to exactly duplicate the stain if you happen to run short. Otherwise you have lost or will lose much time in mixing a second batch to match the first.

Varnish Stains

For moderate-priced work varnish stains are used extensively. These stains, made with pigment colors mixed in good floor varnish, are probably more serviceable when used on floors than oil, water or spirit stains. When spirit stains are used they are of course varnished over with clear

"Eliminate a Fire Risk"

NEWCOMB

SYPHON VENTILATED CABINET

THE "NEWCOMB" GIVES YOU everything you could want in a spraying cabinet and much more than you had thought possible.

Let us tell you about our latest and best development; the fan with direct connected motor, independent of booth, with rear of booth fitted with reclaiming chamber and baffle-doors.

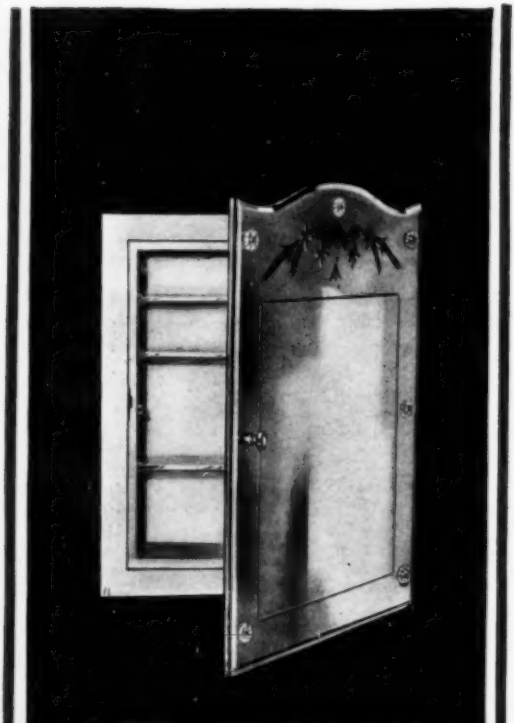
Grand Rapids Blow Pipe and Dust Arrester Company

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

Once again Egypt

good

INDUST



Write the New York office for new booklet "Egyptian Lacquers for Machine Tools." Yours on request.

THE Royal Steel Cab et Com
room Medicine Cabnets wit
quer. Today, they finish throughc

There is likewise today an E
precisely *your* needs. If it isn't
lacquers, transparent colored la
pigmented lacquer enamels, the
"prescription" for you with th
of a pharmacist giving you "just
Our Service Department offers
of nearly fifty years specialized
facture of lacquer exclusively.
your case....

EGYP
Lacqu

THE EGYPTIAN LACQUER MFG. CO.,

Completely equipped branches in
are maintained in the

Atlanta, Boston, Buffalo, Chicag
Dallas, Detroit, Kansas City, Los Angel
Salt Lake City, San Francis

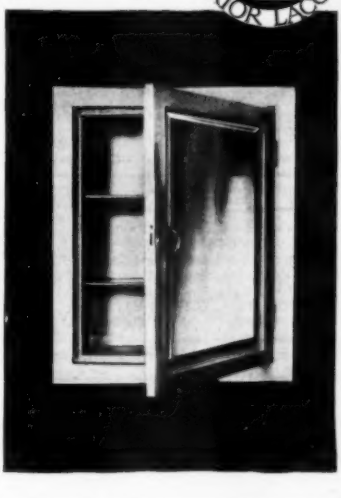
Egyptian Lacquer proves good medicine for DUSTRIAL FINISHING

eel Cabinet Company, Baltimore, Maryland, used to finish their Recess Bath-tine Cabinets with a baked enamel process. Then they tested out Egyptian Lac-ey finish throughout with Egyptian Lacquer.

ewise today an Egyptian Lacquer to meet needs. If it isn't among the regular clear parent colored lacquers, and 140 shades of quer enamels, then we'll make up a special for you with the meticulous correctness giving you "just what the doctor ordered." epartment offers you the practical results years specialized experience in the manu-uer exclusively. Call on us to "diagnose"

The maker who is proud of what he makes, uses Egyptian Lacquer

EGYPTIAN SUPERIOR LACQUERS



GYPTIAN Lacquers

ACQUER MFG. CO., INC., 90 West St., New York

equipped branches in charge of practical men *are maintained in the following cities:*

ston, Buffalo, Chicago, Cincinnati, Cleveland, nsas City, Los Angeles, Philadelphia, Portland, Ore., ake City, San Francisco, Seattle, St. Louis

varnish. Varnish stains are used a great deal by people who are not painters or finishers by trade, for refinishing furniture and for many other purposes about the home.

Varnish stain colors the wood, and fills it to some extent; it also adds a gloss finish all in a single coat. I would not recommend varnish stains for high-class work.

The coloring material in these stains may be the same pigment tinting-colors, ground finely in linseed oil, as are used for oil stains or for coloring white paints. It may be the same pigment colors ground in japan or varnish instead of oil. Or oil-soluble fat aniline colors may be used for making varnish stains.

In mixing varnish stains, as with the mixing of oil stains and paints, the color pigment should always be mixed first with a small amount of the liquid (the varnish in this case). Then add the remainder of the liquid, stirring in a little at a time. After mixing thoroughly, strain the stain through a wire strainer or cheesecloth. Below, I submit the formulas for mixing a few stains, each formula making about one gallon of stain:

Mahogany Varnish Pigment Stain
Italian burnt sienna ½ lb.
Rose pink or maroon lake ½ lb.
Japan drier ½ pint
Varnish (floor, interior, coach or spar) 7 pints

Light Oak Varnish Pigment Stain
Italian raw sienna 1 lb.
Thin varnish (floor, interior, coach or spar) 1 gal.

Dark Oak Varnish Pigment Stain
Italian burnt sienna 1 lb.
Turkey burnt umber 4 oz.
Thin varnish (floor, interior, coach or spar) 1 gal.

Cherry Varnish Pigment Stain
Italian burnt sienna 1-lb.
Italian raw sienna 4 oz.
Thin varnish (floor, interior, coach or spar) 1 gal.

The above formulas will be found to be approximately correct for average conditions.

Finishing Display Fixtures

We find at the present time that it is necessary to produce a finish of quality, as well as making an effort to produce this quality with the least possible operations.

As we have it, the modern lacquer finish meets our requirements best because of:

1—Its quick drying;

2—Its hard finishes;

3—Its durability in withstanding the sun elements, which we find is the most trying on any finish.

We also find that this method of finishing does away with the marring of the fixture from packing material.—B. G. Wegman, Rochester Display Fixture Works.

Between December, 1924, and July, 1927, one of the two airplane passenger lines plying across the English Channel flew 2,000,000 miles and carried 36,500 passengers without a single fatality.

GLUE POTS
To keep glue at proper working temperature—always!
The firm that makes Electric Automatic Glue Pots to the entire satisfaction of the user is
The AUTOMATIC ELECTRIC HEATER CO.
1503 Race Street Philadelphia, Pa.

Automobile
LACQUERS
Free from gum
Give dependable finish
Established 1857
CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

Varnish Printed Furniture

One large factory was greatly troubled with varnish printing during shipment of its furniture. The problem was turned over to an engineer who soon devised a test requiring no more elaborate apparatus than some wood panels, some kraft paper, a few weights, and a corner of the factory cellar where temperature and humidity remained constant.

When purchases of varnish were made in accordance with the findings of this test, the printing troubles were eliminated. It is true that much more time and ingenuity will be required to work out practicable testing systems covering all the requirements of many finishing materials but, where a serious effort is made to do so, it is likely to be generously rewarded.—F. L. Browne.

In California there is approximately one car for every two people; this is a higher ratio than that of any other state. New cars to replace old ones have been estimated at between three and four million cars per year. And this is excellent assurance of prosperity, for prosperity is the flow of materials through the channels of trade, and automobiles keep a tremendous flow going.

In automobile finishing the expense of surfacing mounts up rapidly unless, in application, the glaze is worked level and smooth without an excess of material.

A good resistant oil-varnish should contain linoleate drier in such amounts so that it dries in 12 to 24 hours, as the resistance of oil varnishes depends greatly on the time of drying.

What is IT . . .

? . . . a *new finishing* LAC

Will be ready soon!

An All-round Item

to take the place of Shellac —Lacquer—First Coaters— Shellac Substitutes—also recommended for final finishing.

It's new and different from anything now on the market. Has successfully met practical tests in several large Chicago plants.

You will want to know all about it—let us have your name and address for advance information. No obligation.

E. T. STILLE & CO.

2343 Greenview Ave.

CHICAGO, - - ILLINOIS

New Surface Masking Material

Spraying is so rapidly replacing other methods of painting, enameling, lacquering and varnishing in many industries that the incidental problems which have arisen in connection with that method have not kept pace with its widespread adoption.

One serious problem has been masking the surface not to be covered by the spray. A quick-drying liquid that can be easily and rapidly brushed on the surface to be protected and then, after the spraying, just as easily and rapidly removed, was recently developed to meet this need and has since come into general use.

It is a solution known as "Protect-O-Lac"—a product of the Continental Corporation, 179 West Washington Bvd., Chicago.

This new material covers any surface, such as car fenders, windows, and every part of the car body where needed. While its use was most quickly seized upon for automobile painting, it is not limited to that field, but has been found advantageous in many fields.

According to the manufacturer, it contains no acids, nor anything that is injurious to lacquer, and is applied as a protection against over-spray on all surfaces. It is extremely easy to remove after spraying. Water and a sponge will take it off, and lacquer does not adhere to it. Two-tone color spraying with Protect-O-Lac can be done with a great saving of time.

Dependable
WOOD LACQUER
Made Since 1857
At our works—Newark, N. J.
Pioneer Lacquer Manufacturers
CHAS. COOPER & CO.
90 Worth St., New York—Works Newark, N. J.

Finishes For Fir

The West Coast Lumber Trade Extension Bureau, Longview, Washington, recently sent samples of Douglas fir and West Coast hemlock to a number of paint manufacturers and urged that they paint or stain the samples and use them to let their trade know how to obtain the best results in applying finish to the woods. All of the companies expressed their willingness to cooperate with the Bureau, and are now sending the Bureau stained and painted samples of the principal West Coast woods.

Samples of West Coast woods beautifully decorated and each carrying the name of the paint company and the specifications will be part of the Bureau's exhibit this year before retail lumber dealers' conventions.

Zinc oxide forms soaps with the acids which are present in oils and if oil colors, containing lithopone, liver, it is probably due to the fact that the lithopone contains zinc oxide.

Du Pont Organization Holds Many Meetings

The Paint and Varnish Division of the du Pont Company began, during the last of December and the early part of January, a series of sectional meetings which were held in various parts of the country. The plan follows that of last year, which was found to be highly successful. As a matter of fact, the company decided this year to hold 13 of these meetings as against seven which were held in 1927.

The meetings this year also consisted of a broadened program. They were scheduled to include the sales, production, managerial promotion and advertising forces of the Company besides distributors.

A WRONG USE of RED
Easily Corrected by reading
Practical COLOR Simplified
by WILLIAM J. MISKELLA, M. E.

Written in the language of the Finisher and just off the press

PAGES	ILLUSTRATIONS	TABLES	COLOR PLATES	PRICE
100	20	10	9	$3.50 Postpaid

FABRIKOID **6¼x9¼**

Our book AUTOMOBILE LACQUERING, treating with the very latest developments in finishing, will be *ready soon.*

PUBLISHERS **FINISHING RESEARCH** ENGINEERS

LABORATORIES, INC., *Chicago*

1162 WEST TWENTY-SECOND STREET

Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 802, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

EDITORIAL

Samples in Color—A Merchandizing Help

It is noticeable that manufacturers in several lines are beginning to use true samples of their products—in small size of course—to convey to the trade a real conception of what color finish and decorative treatment are incorporated in their goods. In comparison to pictures in color, the presentation of real samples gives the prospective buyer an opportunity to feel the surface of the finish as well as to examine it carefully by eye.

In other words the sample registers through two human senses—by sight and by touch. It can register through the other three senses, too, if there is anything to record by smelling, tasting or hearing. Anything can be made to look pretty in a picture but the actual sample not only exhibits the real thing but it serves as a true standard of comparison when purchased goods are received.

A typical instance came to this writers attention recently. In the office of a small manufacturer of all oak breakfast room furniture, sets of sample blocks ¼x3¼x4½-in. were being mailed out to the trade. Each of these blocks is large enough to show a field of the high-lighted area on which has been sprayed a stencil decorative design in two colors.

Six samples in different colors constitute the set. The field colors are light tan, dark tan, walnut brown, gray in two tones, apple green and dark lavender. The decorative designs are red and green on light tan and walnut fields, and a reverse arrangement of the same colors on the dark tan field; dark red and white on gray; dark green and orange on apple green, and dark red and gold on lavender.

This gives six different finishes on oak—all attractive but each one revealing the true oak grain with high lighted and color decorations.

Finishing Is Taught in Schools

In reply to your editorial "Teach Finishing in Schools" (January issue, page 70), I wish to say that the honor of having the first practical and thorough wood-finishing school in the United States, in connection with manual training, should go to Mr. Geo. B. Frazee, Jr., principal at Vocational and Technical High School in Grand Rapids, who started the first public wood-finishing class known in the United States in 1924.

This department teaches any operation in wood finishing from sponging to final inspection, burning in, fine rubbing, rotten-stoning, hand polishing, etc.

In this department we have all modern machinery used in wood finishing with the exception of a large rubbing machine, which we intend to get in the near future.

In our everyday class of boys, taking three hours or better, we have between eight and ten being fitted for different positions in wood finishing; as soon as they are of age and have completed their course they are given a position in some furniture factory doing the operation they were taught in school.

We have between 10 and 12 part-time boys who receive instructions in wood finishing one-half day a week. In our evening class we have 24 men who, during the day, work at the finishing trade, but come to school twice a week for instruction in wood finishing to prepare themselves for advancement in their trade.

We also prepare our men for the position of finishing foreman, which course takes three years to complete. Upon completion of the above course, which is practical plus a certain amount of study, we try and place our men in some furniture factory as an assistant or finishing foreman.—R. J. Daniels, Instructor in Wood Finishing.

Furniture by Airplane

Manufacturers of furniture were among the first of business men to recognize the value of commercial aviation. Goods needed for immediate sale by retailers were shipped by the air lines without incident. Among the first to employ the planes were the Grand Rapids Chair and the Imperial Furniture Companies, of Grand Rapids, Mich.

Factors which are quickening development of practical aviation in the United States are improved quality of engines, which makes flying safer and more desirable, improved performance of airplanes and the arousing of interest of capital in this form of transportation.

Industrial Growth

The automobile industry has grown faster than any other industry in the last 25 years, but other industries less well known to the general public have also made striking advances.

Chemicals show a 365 per cent increase; metals and metal products, exclusive of iron and steel, 321 per cent; and paper, printing and related industries, 317 per cent.

Finishing Radio Cabinets in Lacquer

The following schedule is recommended:

1—Water stain.
2—Wash coat of shellac.
3—Sandpapered.
4—Filled.
5—Wash coat of shellac.
6—Spray coat clear lacquer.
7—Spray coat clear lacquer.
8—Spray coat clear lacquer.
9—Rubbed with two parts of rubbing oil and one part gasoline with fine pumice powder, a piece of felt being used for rubbing. Wipe dry.—Joseph Cowan.

Notes On Varnish

If necessary to thin varnish, only pure turpentine should be used. Oils or other varnishes should never be used.

If varnish becomes "specky" after it has been applied, it is often due to the fact that it has become chilled. The specks look like bits of undissolved gum, but this is not the case, as the effect is caused by the congealing of the oil in the varnish.—T. R. N.

"This article touches some of the points that closely affect the workings of the dip lacquer process."— "Platt"

Lacquer Dipping, Draining, Brushing and Drying

Practical and experienced finisher foreman explains why certain details in connection with dip finishing—arrangement of equipment, the handling, draining, brushing off drips and drying—are so important in quality work on an economical basis

By "Platt"

WHEN we speak of dip tanks we usually see in our mind a picture of a workman holding a frame loaded with a number of articles in one hand. He plunges the frame down into the dip, then lifts it up to the supports over the "drip" or drain board, and proceeds with other frames in like manner until the first frames are through dripping. Then, starting with the first dipped frames, he removes the drips still hanging on the articles with a quick movement of the brush—if the articles require it, but not if the drip will not show. Then he rushes the frames into the drier.

This is the usual operation of dipping in a great many shops where production does not reach big numbers, or where an installation of machinery to take the place of manual labor is (or seems to be) a prohibited expense.

A simple operation indeed, yet back of it are some little details that are very important to its successful maintenance and operation. In this article I will omit all reference to fire prevention and cleanliness, as these two points are being continually brought to the front by other writers, and no man wishing to turn out his best work and play safe will neglect them.

Arrangement of Equipment

As regards the location of the dipping tank and space to be utilized for its operation—in fact, as regards any other equipment and its operation—don't use more floor space than you need, but don't cramp the workmen so that every time they turn around they are going to knock the skin off a shin or break a neck.

Each shop has to consider these points:

1—Nearness to plating room and cleaning department. This means time saved. And one thing that should be stressed is that no article should leave the plating and cleaning departments that is not okeh for the dip into either lacquer or enamel. If this point is enforced it not only saves returning goods, but saves the time of recleaning dipped articles.

2—The dip tank must be close to drying room or closet. Another time saver. It is better to pay a man to get out production than to pay him for walking.

3—There must be floor space or shelf space or both to take care of the regular production

What finish is this?

. . . . . It's

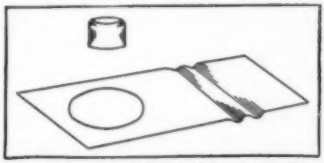
ROXALIN FLEXIBLE LACQUER

Permanent Adhesion to Aluminum, Brass, Nickel Silver, Spelter, Die Casting, Glass.

ROXALIN FLEXIBLE LACQUER in "Clear Lacquer 1510" and "Lacquer Enamels 1510" (in all colors) can be stamped and drawn without flaking or peeling; gives glass-like hardness; enduring toughness; takes a high buff easily.

Lacquered Metal Stamped

A sample piece of lacquered thin-sheet brass and a cylindrical cap, which has been cut and stamped from part of it, have been sent to this office to show the possibilities of lacquer-coating large flat sheets of metal and then cutting and



Sample lacquered sheet of brass and the stamping cut and pressed from it.

stamping them to make whatever shaped articles may be desired. The flexible, colored lacquer coating was not harmed by the machining operation, nor was the coating on the sheet of metal harmed by bending it back and forward repeatedly where the wrinkles show in the accompanying drawing.

—From July, 1927, issue INDUSTRIAL FINISHING

Test ROXALIN Flexible Lacquer with other metal enamels and lacquers—it will speak for itself.

Sample of ROXALIN finished stamped and drawn brass sent on request.

ROXALIN FLEXIBLE LACQUER COMPANY
100-5 SEVENTH AVENUE
LONG ISLAND CITY

that goes through the plant. At various times there are rush orders or extra large orders that will mean the taking up of extra space but, at such times, if your different departments are working together properly everything will work out satisfactorily.

4—And there must be the proper amount of light. Have the dip tank near one or two windows and arranged so the workman stands with his back to the light. The arrangement shown in Fig. 1, worked out very well in a shop that had a small amount of brush lacquering to do also.

Light; Blushing

As regards artificial light, have it so placed that the man can watch the drips on the lacquered articles. Referring again to Fig. 1, the lights over the bench by the windows were used by the man at the dip tank. No light is needed close by the tank in a room that is illuminated by a good light in a proper manner.

Sometimes, late in the day, dampness will work into the room and cause the so-called "blush." But in a properly kept room this seldom happens. Turn on the heat and warm the room. Take articles into the dryer more rapidly and sooner after dipping. This will usually remedy the trouble.

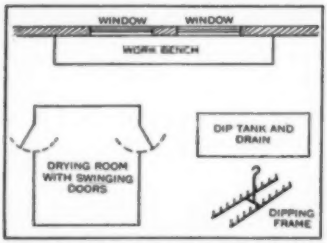


Figure 1—Floor plan arrangement of equipment for economical production. In lower right-hand corner—a metal frame to which small articles are attached temporarily for dipping, draining and drying.

Wood Platforms

I suppose there are a great many executives who would object to the floor being of wood. Probably the nails in a shoe, or metal of any kind scraping on a concrete floor, seldom if ever have started a fire in a finishing room. Knowing from experience that the wooden floor is much easier to stand on, either for dipping or spraying, how is this suggestion? Wooden platforms placed where the operator spends the major part of his time, if the floors are of concrete.

By platforms, I mean an elevation of not over two inches. One-half to one inch is plenty. As long as the surface on which a man stands is wood, it will be much easier to work on. This suggestion is made with the knowledge that perhaps it increases the fire hazard, but in a modern fireproof finishing department, where it should be tried out, I don't think that it would prove an excessive fire risk.

Hanger Bars Above

The bars over the tank—on which frames are hung—should be at just the right height for the operator. Put them high enough so as not to interfere with the dipping, but not too high for the operator. Bars should be placed and spaced so as to take the greatest number of frames without interfering with the dipping and wiping. A rod extending beyond the rest of the overhead rods—on which to hang a frame to remove the drips—is sometimes of value.

A great many articles can be put through, on which one doesn't

A new and revolutionary finish!

Murphy *Flexible* Lacquers

Entirely new finishing material combining the speed of lacquer with the best features of varnish

Manufacturers value the great convenience and speed of lacquer, yet they have not quite forgotten the refinements of finish obtained with quality varnish.

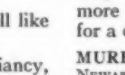
Now you can have, combined into one product, the desirable qualities of varnish with the production speed of lacquer.

These are the advantages of Murphy *Flexible Lacquers:*

1. The basic ingredient of Murphy Flexible Lacquers is not nitrocellulose.
2. They build better than lacquer.
3. They rub with a pull like varnish.
4. Polish at great brilliancy, getting still clearer with age.
5. They toughen with age, *instead* of *chalking* and *checking.*
6. Like varnish, they have a plastic resistance to the expansion and contraction of wood. No humidity checking.
7. They give the appearance and "feel" of varnish.
8. They are waterproof.
9. They look and act like varnish; they dry and wear like lacquer.

If you would like to know more about this revolutionary product, we shall be glad to send you more information and arrange for a demonstration.

MURPHY VARNISH COMPANY
NEWARK SAN FRANCISCO
CHICAGO MONTREAL



MURPHY FINE FINISHES

Famous for 63 years among architects, master painters and makers of products requiring a fine finish.

Air-drying and Baking Varnishes

Enamels, Lacquers and Stains for Brushing and Spraying and Dipping.

need to wipe off the drip. In the outfit illustrated in Fig. 1, a rod was run between the bench and tank—parallel to both at about 6 ft. 6 in. in height—from which to hang frames for dipping and also frames for unloading out of the drying room. If an outfit is already in use and other persons shorter in height are put on the work a little platform, 2 to 4 in. in height and placed where the operator stands, will add to the production because it makes the work easier.

Tanks and Drains

The size and shape of tank, the drip or drain to tank, kind of lacquer, enamel, etc., all depend upon the kind, size, shape (and other points) of the work to be handled. It is up to the head of each individual finishing department to determine what is best for his own needs. With all the service departments of the different lacquer manufacturers always at the disposal of shops having finishing departments, it is gross negligence of management if the finishing department does not get the proper finishing material for the goods it has to finish.

I suppose that in a great many of the average shops the dip tanks and drips for same are galvanized sheet steel, all seams being well soldered. Discoloration, from the action of thinner on metal, can be eliminated by changing to an enameled tank or a porcelain tank.

Renewing Dip Material

After using a dip for a while, impurities collect in the bottom of the tank. The upper and better portion of dip should then be removed and the lowest part, containing the sediment, thrown out. The interior of the tank should be washed clean.

The mixture in a tank may run so thin as to cause iridescence, or be so heavy as to run in heavy drips. Perhaps the surest way is to test with a hydrometer. Usually I pour in equal parts of lacquer and thinner and, if the old dip has become too heavy before new material is added, one to three extra gallons of thinner are added at the same time.

Gold or silver plate never shows the iridescent sign. It may not be the most scientific and up-to-date method, but an experienced man can tell by the "feel" in stirring a new mix, whether the mixture will work right. And you have a good check on the mix as soon as you start lacquering. When a tank is not in use it should be well covered, but not with a flat piece of sheet steel. A good cover stops losses by evaporation.

Where Losses Occur

The worst losses to dip tanks are through dirty, gummed-up

Water White Lacquers No. 82

For Gold
For Silver
For Brass
Always Dependable

Established 1857

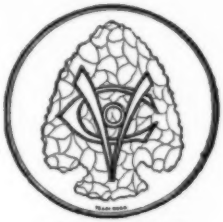
CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

RAUX
ESTER GUM
RESINS

	M. P.
Rosin Ester Gum	115°C
Congo " "	135°C
Manila " "	140°C

Gums cut, fused or treated to meet individual requirements.

ROBERT RAUH, Inc.
480-490 Frelinghuysen Ave. Newark, N. J.



"Wears like Flint"

RELIABILITY

It is a significant fact that we have been for years, and are now, successfully serving large and critical users of finishing materials who are equipped with efficient laboratories, in which they are constantly checking the quality and uniformity of the goods they buy.

The more critical the buyer—the more rigid his tests—the more outstanding is the quality of our products in comparison with that of others.

We specialize particularly in Lacquers—Clear, Rubbed Effect and Colored, and Paragon Rubbed Effect Varnishes—Flat, Velvet and Semi-Bright.

Your Problems are Our Business

THE CLEVELAND VARNISH COMPANY

Established 1881

3111 EAST 87th STREET CLEVELAND, OHIO, U. S. A.

drip boards and frames. I have seen drip boards with such a coat on that when it was peeled off, had it been leather, it would have made an extra heavy sole for a work shoe. How much lacquer do you think that gummy mass held back from running again into the tank from the day's total work? I have seen dipping frames with "amber icicles" below the hooks. I'll wager that in this case the frame and hooks, plus icicles, used up four times as much lacquer as what the articles on the hooks to be lacquered actually did require.

It is good practice, when the old lacquer on the drip board will peel off in fair sized strips, to remove same the first thing in the morning before doing any lacquering.

Clean Frames; Design

Frames may be cleaned in solvent in a cleaning or caustic solution, or burned off, brushed off and then cleaned in cleaning solution. I have always used copper frames with steel wires for hooks, all parts being soldered, because this was the material available.

The worst feature of burning these frames is that it means a lot of resoldering and raises havoc with the copper frame. The heat anneals the copper and makes it too soft in many cases.

For a plant that has a welding outfit, and if they wished to burn off dirty frames, a light steel frame with welded steel wires should work good. Hooks on the frame should number 5, 10, 20, 25 or 50, so as to make a given number of frames equal 100 units lacquered. This will aid in figuring up the number of articles dipped. This article touches some of the points that closely affect the workings of the dip lacquer process.

Measurement of Finishing Materials by Hydrometer

Revealing information about hydrometers and how to use them in finding out the specific gravity of finishing materials; also a bit of caution about attaching too much importance to the instrument readings

By W. H. Martindale

THE MAN in charge of finishing often wonders what steps he can take to insure his mixtures of paint, varnish, japan or lacquer with reducer, remaining uniform from day to day as he makes up new batches or continues to dip his work into the baking japan. A simple test to make and one which will insure a fair degree of uniformity when intelligently handled, is to keep a check on the specific gravity of the reduced material.

Specific gravity is generally determined by means of a hydrometer, which usually is in the form of a glass spindle weighted at one end with lead shot or mercury and bearing a scale for reading purposes. This scale may be in terms of specific gravity or in de-

For Comfort and Protection

Wear the mask designed for your work.
Insist upon modern equipment.

Dr. Willson's Dust and Spray Mask

For ordinary spraying. A filter of long-fiber cotton prevents your breathing fine particles in the air. Price (with 12 filters) $2.25 each. Extra filters, $1.15 per box of 100.

The Willson Fume and Smoke Mask

Especially adapted for spraying paint, enamel and lacquer having dangerous penetrating fumes. Price (with 2 extra cartridge filters) $6.00 each. Extra filters, $1.50 per box of 2.

WILLSON GOGGLES, Inc.
READING, PA.

grees of Baume. The Baume scale is probably used more frequently, although it would be less confusing if the specific gravity scale were used in all cases, since there are two Baume scales—one for liquids lighter than water and the other for liquids heavier than water.

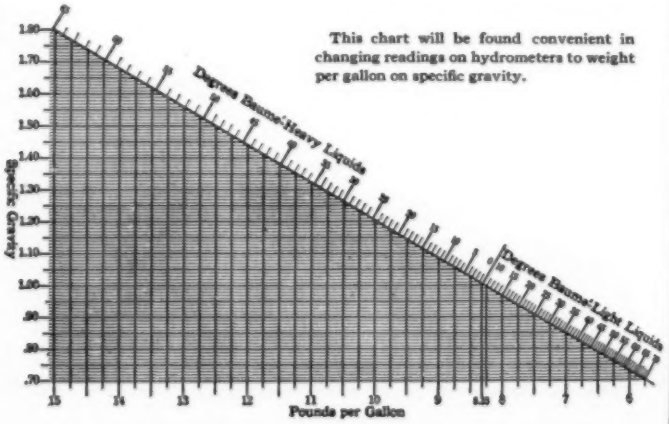
By immersing the hydrometer in the liquid to be tested, it will sink to a certain point on the scale and by noting the reading at the point where the spindle just emerges from the liquid, the specific gravity or Baume reading is obtained. The heavier the liquid being tested, the less the hydrometer will sink into it.

Specific Gravity; Viscosity

The specific gravity of a material should not be confused with its viscosity. The specific gravity or Baume reading is an expression of the relative weight of a given volume of the material being tested, as compared to the weight of the same volume of pure water at a given temperature. Viscosity is a measure of the material according to the relative flow of its particles. It should be thoroughly understood that these two factors are not dependent upon each other and that they represent two entirely different qualities of a material.

While specific gravity and viscosity are not directly related, there is an apparent relation between them so long as the same paint, varnish or lacquer material, made of exactly the same raw materials and according to the same formula, is being tested. For this reason, in commercial work, it is often possible to maintain the viscosity within fairly close limits by keeping the specific gravity uniform.

The hydrometer reading at which the material gives best results should be ascertained by reducing it in various proportions until it works properly, and then take the hydrometer reading at a given temperature. After this, so long as the same paint, var-



This chart will be found convenient in changing readings on hydrometers to weight per gallon on specific gravity.

High Grade Finishes..... to match the Artisan's Skill

No. 96 GLOSS LACQUER and No. 97 RUBBED EFFECT LACQUER

Quality furniture, constructed to conform to certain standards of excellence, necessarily requires high grade finishes. Many manufacturers of furniture are now using the Nos. 96 and 97 system of lacquer finishing—proven by test and in comparison with other finishes that it gives the desired results.

Appearances are a big factor in sales. Sixty per cent of the sales resistance is removed when the finish balances design and craftmanship. Nos. 96 and 97 contribute the deciding factor. In application, they also meet the requirements for lower finishing costs.

96 Get Acquainted with NUMBERS Inquiries Solicited **97**

The American Varnish Co.

1138-1146 N. Branch St. - - Chicago, Ill.

VARNISHES, STAINS, FILLERS, ENAMELS

PYROXYLIN FINISHES, LACQUER ENAMELS

SUPERIORITY UNIFORMITY

nish or lacquer product and the same reducer is used and the hydrometer tests are made at the same temperature as originally, satisfactory results can be obtained if the hydrometer reading is kept uniform.

As stated previously, this hydrometer reading does not actually indicate the viscosity or consistency of the material, but it does indicate the weight per gallon as compared to the weight of a gallon of water or some other standard fluid. So long as the same constituents are in the material, however, their proportion will be maintained fairly uniformly so long as the hydrometer reading is uniform, and therefore the viscosity will probably not vary greatly. This is the reason why hydrometer tests, when properly used, serve very satisfactorily for checking the viscosity or "body in the can" of a finishing material.

Avoid Being Mislead

There appears to be a growing tendency to attach more importance to the hydrometer in testing paints, varnishes, japans, enamels and lacquers, however, than should be, when one considers the limitations and liability for error in its use. For example, if several samples of a given varnish were reduced with a number of thinners (such as turpentine, kerosene, heavy naphtha and naphtha) using the same proportion of varnish and reducer in each case, it would be found that the hydrometer reading would vary according to the specific gravity of the reducer being used, even though the viscosity in each instance might be the same.

If too much importance were attached to the hydrometer readings in these tests, one might be tempted to bring all the samples to the same Baume reading by adding a larger proportion of turpentine, kerosene or heavy naphtha than was used when reducing with naphtha, expecting to get the same results on the surfaces finished. If this greater reduction were given, however, it would be found that the same thickness of film would not be obtained.

This illustrates the importance of taking into consideration the specific gravity of the reducer being used, as well as the specific gravity of the material being reduced, when making hydrometer tests of paint or varnish materials. It is evident, therefore, that if the hydrometer is used, it should be used with caution and with its limitations in mind. Some of the conditions which affect the reading are given below:

Two Baume Scales

1—There are two Baume scales —one for liquids lighter, the other for liquids heavier than water. Most varnishes, reducers, and black baking japans are lighter than water, and the so-called "coal oil" hydrometer should be used. Colored paints or enamels are usually heavier than water and the "acid" hydrometer is the one to use in this case. When giving a hydrometer reading, aways mention whether the scale is for liquids lighter or heavier than water.

2—Thorough mixing is essential before a hydrometer test is made, so as to insure that the material is of uniform density and temperature throughout. The materials should be approximately the same temperature as that of the room when the reading is taken.

RED S. FLAT VARNISH

For producing the smooth flat finish that looks and feels like rubbed work

Three finished effects:

Oil Rubbed
Dull Rubbed
Dead Flat

The Schaefer Company

1315 West Kentucky Street
LOUISVILLE, KENTUCKY

Manufacturers of
VARNISHES *and* LACQUERS

The Temperature Influence

3—The temperature of the material should be noted. Hydrometer scales are usually standardized at 60-deg. F. If desired, a hydrometer with a thermometer enclosed may be used to obtain the temperature at the same time the Baume reading is taken, provided the hydrometer is left in the liquid long enough for the temperature to be accurately recorded.

Roughly, a temperature change of ten degrees F. will change the Baume reading about one degree; if it is desired to approximate the reading that would be obtained at 60-deg. F., this correction should be added to the reading if the temperature at which the test is made is below 60-deg. F., or subtracted if the temperature is above 60-deg. F. for the lighter than water scale. For the lighter than water scale, the correction should be subtracted from the reading if the temperature is below 60-deg. F., and added when the temperature is above 60-deg. F. When giving a hydrometer reading, always mention the temperature at which the reading was taken and the hydrometer scale used.

4—When reducing a given product, bear in mind that the specific gravity of the reducer will have an effect upon the final reading. The heavier the reducer, the more of it will have to be added to a given product to produce a given hydrometer reading.

Consider Results First

5—The quality of a paint, varnish, or lacquer product can not be determined by its specific gravity; results are what count. Thinners do not have the same specific gravity; in fact, turpentine is as heavy as some varnishes. Two lots of a given varnish may be reduced with the same amount of turpentine and naphtha to produce the same viscosity, but the hydrometer reading in each case would probably be different.

6—Where the reducer added to a particular paint, varnish or lacquer product is the same at all times, the consistency of the mixed material can be kept constant by keeping the hydrometer reading the same at all times. Where different reducers or different paint or varnish products are used, the hydrometer reading will have little or no bearing on the viscosity.

For the above reasons, when ordering finishing materials, it is not proper to specify what the hydrometer reading shall be after a given amount of reduction, since this reading can be changed easily by changing the reducers used during manufacture, or when reducing the goods before using it. After all, the important thing is to give the material a certain amount of reduction and get good results on the work. When this has been done, it is time enough to take the hydrometer reading and use it for reference when making up new batches, or when receiving new shipments from the manufacturer.

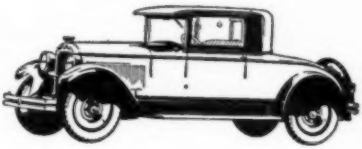
Using the Chart

The chart which accompanies this article will be found very convenient for converting degrees Baume to specific gravity, specific gravity to degrees Baume, degrees Baume or specific gravity to pounds per gallon, or pounds per gallon to degrees Baume or specific gravity.

As an example of how the

WILP

NITRO-JET
SUPER
BLACK



Automobile Finishes

Oil Primers
Lacquer Surfacer
Colored Lacquers
Satin Blacks
Striping Lacquers
Reducers

Furniture Finishes

581 Clear Lacquer
Flat Lacquers
Colored Lacquers
First Coaters
Flat Oil Finish
Flat Varnish
Rubbing and Polishing Varnish
Clear and Colored Spirit Enamels

WILLIAM LILLY PAINT CO.
INDIANAPOLIS, IND.

chart is used, suppose we have a tank of baking japan that shows a hydrometer reading of 25-deg. Baume, lighter than water scale. First find the figure 25, on the longest side of the triangle under "light liquids". By following the straight line from this point down to the base of the triangle, it will be found that 25-deg. Baume, lighter than water scale, corresponds to a weight of approximately 7½-lbs. per gallon.

Going back to the original figure 25, and following the straight line from this point to the left side of the triangle it will be found that 25-deg. Baume, lighter than water scale, corresponds to approximately 0.90 specific gravity. In a similar manner if one knows either the specific gravity, weight per gallon or degrees Baume of a liquid, he can find the other two corresponding properties of the liquid by consulting this chart.

In case it is desired to figure the weight of a cubic inch of a liquid when the weight per gallon is known, divide the weight per gallon by 231; the weight per cubic inch will be the answer. On the other hand, if the weight of a cubic foot of the liquid is wanted, multiply the weight per gallon by the figure 7.481, since there are 7.481 gallons in a cubic foot.

Blindness to Modern Progress

Relating typical experiences which show how some individuals stand in the way of progress and cause their firms financial losses through their persistent skepticism and personal stubbornness

By Donald A. Hampson

LONG before gasoline rail cars became familiar sights on our branch lines, this writer was connected with some development work of the kind where every step was pioneering. At one stage of the work, we had a 1-ton truck chassis rebuilt into a light rail car and, to test its pulling power in a very practical way, we backed up to a box car and hooked on. One of the road's locomotive engineers stood by to chaff us, a grin that was almost a sneer lighting his face.

Gasoline Railroading

The box car weighed 55,000 lbs. and there was a one per-cent upgrade against us, but our formula told us that the engine was capable of moving this car if there was sufficient weight on the rear wheels, which weight we supplied by loading on old rails. The engineer had given our tiny cylinders a glance, then gone back tc where we were coupling up.

"She'll never do it," he blurted out, "she'll never do it!"

Jim, up ahead, had stepped on the gas and gently let in the clutch. The box car started slowly, unwillingly.

"She'll never do it, she'll never do it!"

Jim knew what he was doing and he fed more gas; the car moved faster and faster and rolled out on the main line at 10 miles an hour. The engineer gazed after the disappearing

SPRUANCE QUALITY

WE CAN HELP YOU

As experts of long experience in the manufacture of

Wood Finishing Products

Varnishes—Lacquers—Enamels

for the wood working trade, we are able to fill your every requirement.

We have a separate department for each of these four products, under the direct supervision of an expert who devotes his entire time to that one line. It is his sole business to continually study the needs of the furniture manufacturers and to supply only the finest product to meet those needs.

The result is that you receive only the very best in knowledge, workmanship, and materials.

You can be assured, when you order *"Spruance Quality" Wood Finishing Materials*, that you are buying the very best obtainable.

THE GILBERT SPRUANCE CO.
PHILADELPHIA

"A FINISH FOR EVERY PURPOSE"

train. Slowly removing his clay pipe, his lips again proclaimed:

"She'll never do it, never do it!"

Primative Finishing

This thought occurred to me when talking to a manufacturer about a new method of finishing his product. Said manufacturer did not view developments with an open mind, any more than did that railroad engineer whom the former would have cataloged as "an uneducated person," and excused any lack of receptivity on that score.

These two individuals represent a very large class of men connected with industry. They are unwilling to give any new method or device or material a fair chance to prove its worth. They condemn before they have more than seen the outside. At the bottom of their condemnation, however, is the unwillingness to acknowledge the value of any progress.

In the case of this manufacturer, he would have saved thousands of dollars the first year if he had followed up the improved process. His line was leather—patent leather and fancy finishes. One of the country's foremost exponents of modern finishes had succeeded in getting permission to coat a few hides with its materials—the same materials that all modern tanners now use in their plants.

New Method Demonstrated

The day of the demonstration arrived. The demonstrator arrived also, and with him, his spray gun and his coatings. A line had already been run into the shop to supply air for the gun. The hides selected for coating had been spread on the benches. The demonstrator began work while the manufacturer stood by to watch, assisted by his doubting superintendent.

As we all know, the "make-ready" for a job of this kind consumes more time than the actual production. When the demonstrator finished connecting up hose and gun and cans, and had blown the red through the gun and against a dummy to make sure he had the right adjustment, he attacked a hide. A hiss of a spraygun, a few passes back and forth, and the hide was coated! A beautiful job—evenly spread, and quickly done.

Stubborn Refusal

The manufacturer did not enthuse with the demonstrator. His hands in his pockets, he had watched, saying little. Yes, he did see that it was a nice job—fully as nice as anything they were doing with brush and hand spreading. The thing he objected to was the amount of finish that never hit the hide—that part of the spray which was lost in the air. The demonstrator explained that a booth would take care of that criticism and that small losses of that sort were inherent to the spray system.

Said manufacturer, however, figured the cost of the new materials against the (lower) cost of his old ones. When he had done that and included the loss of "fully half to the air," he decided against spraying the hides. If he had read up on the subject, listened to serious-minded salesmen and had visited other plants, he would have learned that a certain amount of finish is always lost by spraying, but that this may be held to a minimum which is small in comparison to the saving in labor by other methods

(Continued on page 118)

Devoted to—
Questions
Answers
Suggestions
Comments and
Discussions on
Specific Problems

Questions and Answers

Information Service

Every issue of *Industrial Finishing* contains a wealth of practical information on various subjects of interest to users of finishes and finishing equipment, but from time to time new problems and questions arise, which demand prompt and authentic information. *Industrial Finishing* is in position to service inquiries, and the editor invites all individuals and concerns in the industry to make known their wants. Every effort will be made to supply the information desired, at no cost to you.

Questions are invited in regard to:

Finishing-room troubles or problems;
Where to obtain certain materials, supplies or equipment;
What methods or materials to use for certain results.

Additional comments or suggestions regarding questions, answers or articles appearing in this section, are invited.

To Readers Of

Industrial Finishing

This journal is designed especially to suit your particular needs and we want to know what information you desire, what problems or difficulties you have and how we can assist you in your work. It costs you nothing to make inquiries or to tell us what subjects you wish to see discussed in our reading pages.

Many times you have probably felt prompted to write some of your own experiences, opinions or ideas. Now is your opportunity. INDUSTRIAL FINISHING solicits articles from practical men and pays for all acceptable material.

Kindly express yourself by writing us just what subjects you would like to see covered by articles in the publication; or just what subjects you might write on for publication. Address your communications to

INDUSTRIAL FINISHING, Room 802, 222 East Ohio St., Indianapolis, Ind.

I am particularly interested in articles on

I might write you something on

Name _____

Position _____

Company _____

My address _____

_____

Questions and Answers

Spraying Filler Under Lacquer

In connection with use of nitrocellulose lacquers on wood, we are interested in a filler, natural and colored, that can be sprayed on, dries quickly to obviate the overnight drying, yet is slow enough to be wiped off. Coloring to be sufficiently strong so that the staining and filling is done in one operation. This feature is particularly necessary for cheap and medium grade work, and until such is available, manufacturers here in Australia refuse to use lacquer except for high-grade work, and mass production.—L. N. W., So. Australia.

Attempts have been made in the United States to manufacture fillers of the type mentioned and at least one company has such a product for sale. So far as I can learn, however, these quick-drying combination stains and fillers have not proved entirely satisfactory, however, because of hardness of wiping off, shrinkage after being finished, lack of permanence of color, cloudiness or muddy-color effects, and various other difficulties.—R. L. M.

Wood Lacquer Trouble

In the finishing of transportation vehicles and furniture such as tables, ice chests, kitchen dressers, etc., we find that pigmented lacquers develop hair line cracks, and in the case of exterior work, as on the wood sections of cars, busses and trams, the lacquer after a few weeks' exposure, peels off. Is there a good formula for a suitable primer, with filling qualities, perferably white? An oil-base appears to be essential, but of course, speedy drying would be an advantage.—L. N. W., So. Australia.

It is quite easy to finish interior furniture such as tables, ice chests, kitchen cabinets, etc., with pigmented lacquers without the development of hair-line cracks and similar defects. Good quality oil-base undercoats, which dry to recoat in 8 to 16 hours, are available for this class of interior work. If hair-line cracks are forming under such conditions, perhaps the undercoats are too long in oil, or were not dried sufficiently before the lacquer coats were applied.

The use of lacquer on wood surfaces exposed to exterior weather conditions is quite a different problem and, to my knowledge, no entirely satisfactory method has yet been developed for use under lacquer under such conditions. The difficulty seems to be that the wood absorbs moisture from the air during damp weather, with a resultant swelling of the wood to such an extent that the lacquer film is cracked open and the bond of the finish to the wood is destroyed. Many bus and railway companies in the United States have discovered this to their sorrow.

Over here, an oil-base material has been developed to meet such conditions as this. The primer is quite long in oil and attaches itself firmly to the wood, after being dried overnight. One

or more coats of surfacer or building-up material can be applied over the primer, putting on the coats as quickly as 1½ hours apart.

The last coat of surfacer is dried overnight and sanded smooth. Then one or more coats of color are applied about two hours apart; these coats can be rubbed and polished the next day in the same way as a colored lacquer, or they can be finished over with a special clear quick-drying varnish.—R. L. Masterson.

Low Cost Walnut Finish on Other Woods

Will you kindly furnish me with information as to the cheapest possible lacquer finish on dressers made with birch, pine and sap gum, so that the finish will have a uniform walnut effect?—J. G. M.

It is practically impossible to stain birch, pine and sap gum to a uniform walnut shade by means of the ordinary water or oil stains, without doing considerable overtoning, because of the uneven absorptive properties of these woods. Furthermore, the difference in the grain of these woods makes it difficult to unify and disguise them to imitate walnut. For these reasons a surface stain should be employed for the best results.

Probably the cheapest uniform walnut finish, in lacquer, on these three woods is obtained by mixing small quantities of brown, black and red lacquer enamels with a transparent or clear lacquer primer which has been thinned down to spraying consistency. Varying amounts of these colored lacquers can be used to obtain different shades of walnut. Only one or two pints of colored lacquers will be required to a gallon of clear lacquer primer.

The wood surface is colored by spraying the tinted lacquer primer, passing over the surface once or twice and putting on enough of this material to get the desured shade. The spray gun should be well regulated so as to give a uniform coating. If desired, the surface can be shaded or antiqued, during the application of the primer coat, by going over the edges with an extra coat.

After the primer coat has dried from two to four hours, it should be sanded smooth with dry sandpaper. Any stripes or decorations should then be applied and the work finally finished with a spray coat of flat-drying clear lacquer.—I. F.

First, make a water stain consisting of walnut powdered crystals, using this powder two ounces to two gallons of boiling water. Use this stain on the solid birch, and on the pine and sap gum use two parts stain and one part water, allowing this to dry for 12 hours.

Second, a wash coat of shellac, half white and half orange but with alcohol half and half. Allow this to dry four or five hours and sand with No. 5/0 sandpaper. For the second coat of shellac, use two parts shellac (white and orange) and one part alcohol, allowing this to dry eight hours.

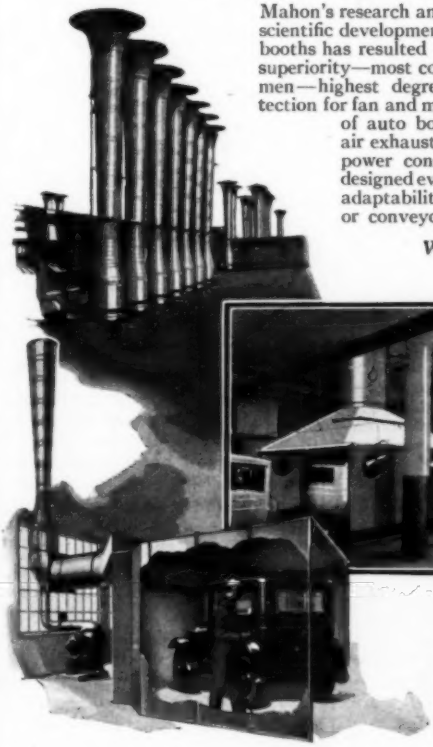
Third, finish with a good grade of flat lacquer. This will make a good finish—one that will be tough and durable. If it is not too expensive, use one coat of gloss lacquer and then one coat of flat lacquer. This will produce more body to the finish.

Another good color adaptable to these three different woods is

Mahon Again Improves Spray Booth Equipment

Mahon's research and practical experience in the scientific development of various types of spray booths has resulted in the following features of superiority—most complete protection for workmen—highest degree of fire safety—full protection for fan and motor—painting of both sides of auto bodies at one time—greatest air exhaustion capacity with less horse power consumption through specially designed evase type exhaust stacks, and adaptability to stationary, turntable or conveyor line production methods.

Write for Catalog



Illustrations here show Mahon equipment in use on conveyor line in a large auto body plant --Mahon evase type exhaust stacks and an individual booth for use in auto paint shops.

THE R. C. MAHON COMPANY, Detroit, Mich.

MAHON

SPRAY BOOTHS & EXHAUST STACKS

- DESIGNED FOR FIRE SAFETY -

Kindly mention INDUSTRIAL FINISHING when writing advertisers

a No. 8 walnut water-stain powder from (Name on request).

First, use one pound of stain powder to two gallons of boiling water, using solid on the birch, but on the pine and sap gum use two parts stain and one part water. Then follow up with the same finish as given in the first formula.

These two colors make a pleasing shade of walnut. If you want a more reddish tone of walnut, you may add a small amount of red stain to either one of these colors.

May I suggest the way to use flat lacquer? For a dead effect, use straight flat. For semi-gloss, add a small amount of gloss lacquer. By using these two lacquers together you can get the exact sheen you want.

Do not use oil stain, as lacquer and oil stain do not work very well together.—T. R. Nall.

That Strange Finish on Furniture

Referring to A. W. W.'s question entitled, "What Strange Finish on This Furniture" (page 98, January issue), I will admit this is a strange finish, along-side the present-day finishes. Much of this oil finish can be found on many antique pieces. Of course this dates back hundreds of years.

Much of the older pieces were finished with crude oil soaked well into the wood, but it's hard to tell what it was rubbed with. Later this method of rubbing with graphite was used along with the raw oil and turpentine. Some finishers of antique still use this crude method, by soaking the wood surface well with oil and afterward, dulling off with plain pumice rubbed over with a brush.

A number of times I've had the pleasure of cleaning this oil finish off the surfaces of a few pieces that were very old. It's a very hard job and you can never get it entirely out of the wood, especially maple and the light colored woods. After the dirt is cleaned off the wood, a very nice mellow color remains on the wood surface; after being finished in a modern way, this is very beautiful.—J. K. Cooper.

French Polishing

We believe that the finish referred to is a French polish. This is a rather elaborate process when properly done. It is the old style of shellac finish which has been in use for many years.

The shellac should be used not too heavy, and application is made in this way:

A cloth folded over several times into a thick wad, which can be held in the hand, is dipped in the shellac solution. Have a little rubbing oil handy, and after dipping the cloth in the shellac, touch the center of the cloth with a few drops of rubbing oil—just with the tip of the finger.

Do not get the cloth too oily, but a little rubbing oil is necessary.

Start in the middle of the surface, rubbing in small circles and working outward. When the cloth begins to drag and the shellac is setting, stop the operation and let the shellac harden. Then follow again with the same process.

This builds up what is probably the most durable wood finish known. It is semi-dull and imparts a fine tone and surface to the wood. The history of wood finishing would disclose many fine pieces finished in this way.

The process is not followed

very extensively today, for the reason that it would naturally be too expensive for work on a production basis.

The important thing is to have the shellac solution thin and then build up the finish with anywhere from four or five to even ten coats. It is claimed that this finish has been applied in some cases where 50 coats were used.

Be sure that each application hardens thoroughly and is perfectly dry before another application is made.

You can water-rub with fine pumice after the last coat if you wish, but we believe that in some respects it is better not to do so.

P. S. In this process, bear in mind the necessity of using the shellac in a *thin* solution. Do not have it too heavy, or satisfactory results will not be obtained.—H. B. Young & Co.

More About "Why Stain Fades"

I have read an article in December issue of INDUSTRIAL FINISHING on "Why Stain Fades," signed by Philip Myers in answer to an inquiry made by E. L. M. and we do not agree with his explanation of E. L. M.'s trouble, or at least, with his method of correcting the trouble.

Mr. Myers mentions particularly to eliminate using shellac over his stain and filler. My experience has been vast among the woodworking industry and where he mentions that shellac is brittle, he is entirely wrong. Shellac is not brittle! Shellac has the greatest amount of elasticity and tensile strength of any known gum in the world!

ZELLAC

"We Aim to Please!"

The old slogan is still good. Like every other manufacturer in your field, you have found that the national demand for color is reflecting itself in your products because *you* aim to please!

The leading, most enterprising manufacturers are making bold innovations in color effects that lift their products out of the ordinary run and make them pleasingly *different*—more salable.

The possibilities are practically unlimited. From the strongest, richest colors to the most delicate pastel shades, Zellac finishes offer a range of the utmost diversity. Amazingly beautiful and unusual effects are obtainable with Zellac Crackle Enamels over pigmented-color and metallic-powder foundations. Crackle grades glazed or antiqued with color,—and the various treatments of harmonious Shading and Antiquing,—done with Zellac,—increase the salability of your products.

We can suggest appropriate new color ideas to you. In fact, we're prepared to cope with any finishing problem. Our representative will gladly bring our service to your desk, linking you direct with our laboratories. Write today.

ZELLER LACQUER MFG CO.
Zeller Building
20 East 49th Street New York

Stockrooms and Offices at:
Chicago: 551 West Lake St. *Los Angeles:* 786 Ceres Ave. *San Francisco:* 1039 Harrison St. *Denver:* Ormor Sales & Supply Co. 503 Fourteenth St. Distributors.
Wichita: Ormor Sales & Supply Co., 452 N. Main St. Distrib'rs.

ZELLAC

ZELLAC

Gives
the effect of a
Rubbed Varnish Job
at 40%
Saving in Finishing
Costs

FINISHEEN

A MARVELOUS

NEW FINISH—Combining the Qualities of SHELLAC—LACQUER and VARNISH.

The ideal finishing material for furniture, radio and cabinet manufacturers. It's the remedy for present day finishing troubles.

Tough—lustrous—requires little sanding—dries fast—will spray-brush or dip.

Send for the working sample today—no obligations

THE
MARX & RAWOLLE
CORPORATION
Est. 1849

125 Ann St. Chicago
551 Fifth Ave. New York

Manufacturers of
VARNISHES—LACQUERS—
STAINS—ENAMELS—
SHELLAC

If this were not so, why is it used by all the composition manufacturers for molded parts which are compressed under excessive hydraulic pressure? Were it not for its elasticity, it would break. It has more resiliency than Kaurie or any other of the well known hard varnish gums, and were it possible to cut shellac in any other solvent other than alcohol, its uses would remain infinite.

Therefore, had E. L. M. used an absolutely *pure shellac* cut in special denatured alcohol—Formula 1—on top of his stain and filler, he would have set the stain and filler, and would have had a firm base for his lacquer and would by this method have held both his stain and filler where it belonged—especially if he used a vegetable stain or a good aniline stain with the salt eliminated. Such a stain is bound to stay its original color and fading is almost impossible.

Unfortunately, the majority of the woodworking trade are using so much cheap substitute shellac, or combination of half shellac and half substitute, made out of cheap Manila gum, with benzol and acetone as solvent, that these combinations work diametrically against the stain and the lacquer so that first-class finishing by the uses of substitutes and combination shellac is impossible.

We believe that E. L. M. is entitled to a correct interpretation for the elimination of his trouble. —James W. Byrnes of Rogers-Pyatt Shellac Co.

Prune color is a popular shade, being somewhat on the reddish-purple order.

Burning in Shellac, O. K.

In looking over an article in December issue on the subject of "Defective Furniture Finishing" by Fred Mannhardt, we are surprised to find on page 16 a statement that burning in shellac causes varnish to check.

It is true that some of the old-time wood cements, which contained a large percentage of linseed oil, did check in the course of time, but that is not true of the stick shellac which we manufacture. It will not shrink and check.

Evidently Mr. Mannhardt has never seen stick shellac applied by anyone except an amateur, otherwise, he would not make the statement that the repaired place looms up like a bouquet in a buttonhole. A good finisher can do a job in the middle of a piano panel that cannot be detected.—The M. L. Campbell Co.

Mahogany Finishing Problems

Referring to the inquiry under this heading in Jan. issue, page 100, Philippine mahogany is not an easy wood to finish, and the correct method of finishing it has agitated the trade for a long time. This wood undoubtedly would be much more extensively used if it were not so difficult to finish.

However, the following suggestions may be of some help:

Stain the wood first. Oil stain will probably serve your purpose better than water stain. Oil stain will not raise the grain. Mahogany oil stain is not quite as durable in a strong light as water stain, and this may be a point that you will have to take into consideration. No oil mahogany

dress your product for market but keep costs down

For quality furniture use *Lucote Wood Spraying No. 104.* It won't crack, won't dull, won't disintegrate. Even cedar chests with varying amounts of oil—show a uniform finish throughout—when protected with this lacquer.

We maintain a staff of practical and technical men whose services are available at all times to the trade to aid in the solution of finishing problems. There is no charge for this service.

John Lucas & Co., Inc.
Paint and Varnish Makers Since 1849
Philadelphia

Lucote
a fine wood lacquer

Aero Varnish

It has SPEED
It has BODY
Easily Rubbed
Easily Polished
Low Priced

OUR GUARANTEE
Send for five gallons—If not as we claim, return it.

Jamestown Wood Finishing Co.
Jamestown, N. Y.

stain is guaranteed absolutely fast to light.

If you use water stain, it will raise the grain. Let it dry and give it a very light wash coat of strictly pure orange shellac. Take orange shellac of ordinary consistency, say 4½ lbs. weight, and thin it down with from one to two parts of denatured alcohol, to one part of shellac. Use this for the wash coat; this will stiffen up the grain, and as soon as it is dry you can cut the grain off by light sanding.

If you intend to fill the pores, this coat of shellac should be of exceedingly l i g h t consistency. There is a kind of oil in the pores of Philippine mahogany that also makes it a little difficult to fill properly, but the above we think is the best process.

Follow thereafter with another coat of shellac and varnish or lacquer for finishing, as may be desired.—H. B. Young & Co.

What Metal Finish

We are sending you a sample of metal and would greatly appreciate if you will and can advise us just what finish this is and how obtained. This is cut from a curtain rod. We are interested in making a rod of similar metal and finish and we wish to learn if it is plated, dipped or what, or if the metal can be bought plated or lacquered?

Any information you can give us as to how it is done and what it is, or where such finished metal can be obtained will be appreciated.—O. Inc.

This strip you sent us is apparently finished with a baking varnish, colored with a yellow

dye. The same effect can be secured with a quick-drying lacquer on a pyroxylin base, but will be more expensive.—S. P. Wilson.

Sizing for Mahogany Stain on Basswood

Kindly advise us what, in your opinion, is the best sizing to go over mahogany stain on basswood. Also advise the best method in which to apply this.—B. B.

We believe that strictly pure orange shellac is the best material for this purpose.

The method of application can be determined by the nature of the work. Shellac is sprayed on in many wood finishing plants. It can also be brushed on very easily. It can be applied by dipping or tumbling also, for very small pieces.—H. B. Young & Co.

Water Staining

When water stain is applied to wood it saturates the fibers both inside and outside, and, on drying, the grain is found to have been raised. This necessitates careful sanding to remove the "whiskers" and at the same time avoid cutting through the stain. If this additional operation ended the problem it would not be so serious, but the wetting of the wood also tends to open its surface structure.

This opening action emphasizes the unevenness of the wood surface and so breaks up the reflected light that sometimes it is difficult to get a so-called "full" finish. With the development of high-solid-content lacquers this effect has been overcome to some extent. —S. M. Silverstein.

DU-PROS SHELLAC

The only shellac made by the double process. We put more into it—therefore it does more. Still it costs you the same.

FINEST QUALITY

Only high grade shellac gum and Government test alcohol go into Du-Pros Shellac. The difference is the way we make it—by the double process.

JAMES B. DAY & CO.
CHICAGO

HERE IS A REAL **RESPIRATOR**

FOR PAINT SPRAYING AND FINE DUST

Easy Breathing Better Protection Safety

Improved Pulmosan Aluminum Dustpruf Respirator

Made especially to meet all spraying conditions. More protection. Comfortable. More service. Tested dustpruf filter that honestly protects. Sanitary. Can be cleaned after using. Other Pulmosan paint spray Respirators include sponge chemical cartridge and attachment for air line hook up.

Order from your dealer or direct

PULMOSAN SAFETY EQUIPMENT CORP.

Manufacturers of SAFETY APPLIANCES, RESPIRATORS, GOGGLES, GAS MASKS, SAND BLAST HELMETS, ETC.

380 Jay Street **Brooklyn, New York**

The Better Way It Pays

Strand

Power Filler Rubbing Machine

Flat Surface Work Only

Do away with the old strongarm method of rubbing in wood fillers. You can do a better job with less effort with this machine.

Furnished floor type as illustrated or mounted on suspension base with adjustable tie rods. Arranged with cord switch and plug for operating from the lighting circuit.

½ H. P. Motor.

Manufactured by

N. A. STRAND & CO.

5001 North Lincoln Street

CHICAGO

A High Class Baked Enamel Finish on Cast Metals

Emphasizing the value of a high class baked enamel job and explaining in detail the operations and precautions required to produce such work with modern equipment

By C. S.

FIRST, let us look at the baked enamel product from the salesman's and buyer's point of view. Displaying a product with a high-class finish makes the first impression on the buyer. He sees this and appraises it before considering the workings or other details. The salesman must have full confidence in the general appearance of the product when he shows it. He must be proud of it.

We all know that a high-class product requires a high-class finish and that a high-class finish is attractive.

A high-class baked finish, in my opinion, means a finish beautiful in all respects, such as cleanliness, depth of luster, full body, free from sags and wrinkled edges, and not like the one or two-coat, "preserve-the-metal" job. After all, it is the quality of the finish on the article to be sold that arrests the customer's eye and creates interest in the product. We are all familiar with that nationally-known slogan, "Save the surface and you save all." But the slogan for this article will be, "Quality-finish the surface, and you make the sale."

Cast Metal Jobs

In finishing cast iron, cast aluminum or other cast metal articles, the finishing cost will run somewhat higher than for sheet metal articles, on account of the surfaces of castings being in a rougher condition to start with. This calls for more preparatory work getting the castings into condition, such as filling small holes and smoothing the rough spots.

First of all, castings that are to be finished with baked enamel must be ground and polished smooth in the polishing department, using a fine grade of emery for the final polishing. The condition of the surfaces of castings is very important where a quality finish is desired. Castings should be inspected and checked for deep emery scratches, rough spots and other defects before being passed on to the enameling department, as it becomes costly to fill and apply extra coats of enamel to cover up defects that may be taken out more cheaply by grinding and polishing.

Cleaning Off Oil

Castings that have been machined, such as drilling and tapping holes, etc., become somewhat greasy from handling. This grease may be baked off of the castings at a slightly higher temperature than is required for the enamel. Filings and chips must be blown out of the holes with compressed air.

Surfaces that are wet with oil must be treated differently, as

baking oil at high temperatures has a tendency to leave a hard glass-like film on the surface which, in my opinion, destroys the adhesive power of the enamel to a certain extent.

Oil and grease may be removed from any kind of cast metal with gasoline, but the caustic soda solution is being used to a greater extent as a cleaner today in production work. The caustic soda solution, however, is not adapted or recommended for cleaning aluminum on account of the dissolving action the solution has on the metal. Aluminum may be cleaned and a sandblast surface may be obtained by very careful and skillful use of caustic soda solution, but a considerable element of risk is involved. I would not recommend this method where quality production is wanted.

(*Note by Editor*: Commercial cleaners are used in increasing volume and are highly recommended on account of their safety, the fact that they are designed for a specific purpose, and that instruction service is available from manufacturers of such compounds).

With the caustic soda bath goes one warning which we read from time to time in this magazine. That is, remove all traces of caustic before applying enamel, as it carries a damaging blow somewhere along the line; it will cause peeling and blistering which would kill our so-called quality finish.

Prime; Putty; Bake

After castings have been cleaned thoroughly, they may proceed to the dip tank or spray booth—whichever the case may be—to receive the first or primer coat of baking enamel, and then be baked. Our next operation is applying putty or iron filler into the holes and rough spots, then allowing the castings to air-dry over night or force-dry them in an oven at approximately 200-deg. F. for two hours. After the finish on the castings is dry, the surface may be sandpapered smooth all over with a fine grade of sandpaper. Then dust and tack-rag the castings and apply a second dip coat and allow to drain. When enamel is set, dip again or double-coat and allow to drain thoroughly, at which time castings may be placed in the oven to bake.

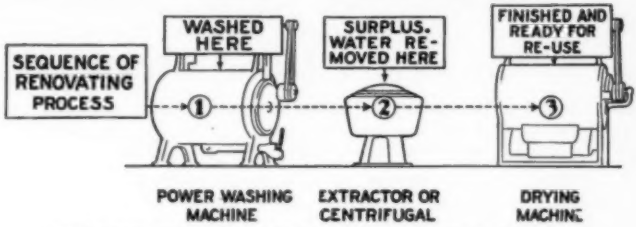
Dipping; Spraying

When dipping, be sure that the enamel is of the proper consistency and that the castings are hanging in the proper dipping position, so as to eliminate pockets where excess enamel may accumulate. If possible, hang the castings so that the enamel drains from a corner or point. This eliminates heavy or wrinkled edges. Dip slowly, as a fast dip causes bubbles to appear on the work and in the tank.

Double coating is also applied by spraying. This is practically two coats at one bake. The purpose is for filling and obtaining a heavy-body surface at the same baking time.

After castings have been removed from the oven, the surface should be clean enough to apply the finishing coat, except for the occasional speck of dirt which may be rubbed out with powdered pumice stone and water, kept close at hand for this purpose.

When castings have been finished and removed from the oven for the last time, we should see that quality finish mentioned at the beginning of this article.



This is the "American" unit developed to meet your requirements. Have us tell you how it will save money in your plant

"Two hundred pounds of wiping rags where we used to buy a thousand"

"WASHING our wiping rags and using them again and again has certainly saved us money," said the superintendent of a well-known Massachusetts manufacturing plant.

"We used to buy a thousand pounds of rags at a time," he continued, "but, since we installed our three-machine 'American' unit, we've found that two hundred pounds will go just as far."

* * * *

And what "American" equipment has accomplished in this plant it will do for you. Near you is one of our specialists in industrial laundry problems. He can show you a way to save money on your wiping rags. Write us—we'll put him in touch with you at once.

The American Laundry Machinery Company

Specialty Department U, Cincinnati, Ohio

The Canadian Laundry Machinery Co., Ltd.
47-93 Sterling Road, Toronto 3, Ont., Canada

One of the newer types of finishes for metal.

Using Water Japan Finish

What water japan is, why it was developed and how it is employed as a finish for metal products. Both the hot-dip and electric-dip methods of applying this material are described and compared

By Russell W. Brandt

AMONG some of the outstanding achievements in the paint industry, developed during the past few years, is the discovery and development of water japan.

We are all familiar with the ordinary baking japan consisting of a japan base of one or more asphaltic materials, together with some drying oils and possibly a small amount of gum. These are all diluted, or thinned, with a solvent, which may be naphtha, benzol, kerosene, etc., depending on the use and the properties desired.

This baking japan is very flammable, due to the necessary use of the volatile solvents and thinners, and it was because of this fact—the great fire hazard—that water japan was developed.

What Water Japan Is

Water japan is an emulsion of an asphaltic material, a saponifiable oil, etc., in water. There is also an alkali, such as ammonia, added to the water; in some instances varnish gums, such as copal, may also be incorporated therein.

The manufacture of water japan is entirely different from that of baking japan. Water japan is made by taking a japan base, water, and an alkali such as ammonia and heating the mixture in an enclosed vessel. While being heated it is usually stirred in order to make a thoroughly uniform emulsion. This emulsion consists of very small droplets (about 1/100,000 in. in diameter) of japan. Each little droplet is surrounded by a film of soap, produced by the action of the alkali on the oil.

The action of these tiny droplets of japan floating around throughout the emulsion have been likened to globules of butter fat that swim around in ordinary sweet cream. This water japan emulsion is permanent and shows little or no tendency to settle out, even after several months of standing undisturbed, and it also may be strained in much the same manner as ordinary baking japan.

How It Is Applied

Since the viscosity of water japan is less than that of baking japan, it can not be applied in the same manner as the baking japans. Therefore, two processes have been worked out for its application. In both of these processes the japan base is deposited on the metal in a solvent free condition, that is, the asphaltic materials alone and none of the water or liquids are deposited on the metal.

There are two general methods for the application of water japan—the hot-dip method and the electric-dip method.

Hot-Dip Application

The hot-dip process is the one most widely used where large production is required and it is readily adapted for treating large quantities of small articles such as castings, punchings, etc.

The articles to be coated are put in large wire baskets, which can hold over 100 lbs. of material, and are then placed in an oven to be heated to about 500-degs.F. The material is removed from the oven and, as it cools to about 400-degs.F. it is quickly plunged into the water japan for about ten seconds, removed and allowed to drain for about 30 seconds; it is then placed in a baking oven where it is baked in the usual manner; if it is run right back into the original hot oven from which it came, a 20 or 30 minute bake may be sufficient.

This preheating of the articles serves also as an inexpensive way of cleaning the surfaces of oil and grease, since all or most of this undesirable material is cleaned off by the heat of the oven. It is also possible, by the use of the hot-dip process, to give the articles more than one coat. In such a case the work could be taken out of the baking oven, dipped again and then baked.

Electric-Dip Application

In the electric-dip process, which is particularly adapted to small odd lots, the water japan is put into an iron or steel tank which is connected to the negative terminal of a direct-current electric circuit. As the droplets of japan base in the water japan carry negative charges they will be attracted to metal carrying a positive charge. Therefore, the metal to be coated is hung in the solution and connected to the positive terminal of the electric circuit.

When the current passes through the circuit the droplets of japan base leave the water and are deposited in a thin film over the metal to be coated. As the japan film is "plated on" the metal surfaces, it tends to insulate the covered portion, therefore any pits or holes that are left bare are next coated.

After objects have been coated by the electric-dip process it is advisable, though not absolutely necessary, to dry them a little to remove the superficial film of moisture and then bake them for a short time to set the japan.

No special voltage is necessary when using the electric-dip method, as satisfactory coatings have been obtained when using 10 to 250 volts. Using a 125-volt circuit, the time required to obtain a good coating is about 2½ seconds. The thickness of the coating depends upon the product of the current density and the time.

In using the electric-dip process the material to be coated must be absolutely clean and free from oil or grease, because the presence of any of these on the surface would tend to insulate the material and thereby prevent the japan base from "plating on."

Temperature; Viscosity; Etc.

It is desirable to maintain the water japan emulsion at a temperature below 86-degs.F. — say about 70-degs.F.—in order to prevent the formation of a scum on top due to the action of the carbon dioxide of the air.

The viscosity of water japan is not an indication of the thickness of the film, as is customarily used in the case of ordinary baking japan. With water japan,

one is more concerned with the concentration, that is, with the amount of japan base contained in a certain volume of the solution.

It is possible, by the use of water japan, to coat material with two different types of japan coatings. For example, the first coat may be one kind of japan, chosen more particularly for its adhering properties, and then the second or finish coat may be of another type of japan, chosen for its surface properties such as color and luster. Two-coat work can only be applied by the hot dip process.

New Rotary Brush Sections

A new type of circular wire-brush section which, it is claimed, simplifies the brush problems met with in scratch-brushing, cleaning and rough polishing, has recently been placed on the market by the Specialty Mfg. Co., Cleveland, Ohio. The wires (steel, brass wire or tampico) are held in place

FINISHES
ENAMELS LACQUERS
VARNISHES
Are made in a modern plant devoted
to making Industrial Finishes only.
Our crackle and crystallizing baking lacquers cover several well-known metal products in the office appliance industry. Let us tell you about them.
THE KAY GESS CO.
DAYTON, OHIO

on the accurately-balanced lead center by means of two stampings provided with projecting teeth which pass through the tufts of wires from each side and through the holes provided in the plates. After assembling, the projecting ends of the teeth are bent over and clinched tightly against the surfaces of the opposite stampings, thus effectively preventing all possibility of the tufts loosening up after long use.

All tufts are carefully weighed to assure perfect balance, and by means of a special process, the ends of the wires are trimmed so that the brush is perfectly circular.

Improved Overhead Trolley for Transferring Materials

In its 24-page "Book 106," the firm of Herbert Morris, Inc., Buffalo, N. Y., illustrates and describes modern overhead trackage, switches, trolleys and chain hoists for use in handling and transferring heavy articles and materials. An interesting feature of this heavy steel I-beam trackage is the fact that the switch used is always set for trolleys to travel directly through in any direction without slowing down.

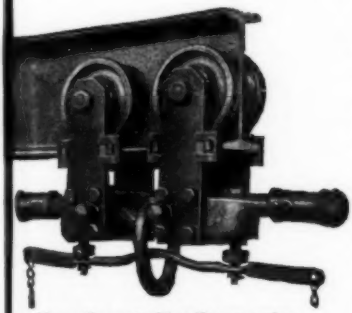
Ideal equipment for handling heavy drums of finishing material.

The steel I-beams used for trolley trackage are extra large in cross section and are attached directly to existing supports 20 to 25 ft. apart.

The trolley, as illustrated herewith, is made in the four-wheel type for all capacities, differing only in size according to the load to be carried. It travels smoothly and freely around curves as small as 27-in. radius. Spring bumpers prevent damage, should two trolleys collide on the track.

Hardened-steel rollers in the trolley side plates prevent binding or friction when passing through the switches or around curves.

The trolley travels straight through the switch on the main track or from the branch to the



Above the control handles are spring bumpers at each end.

main track without any attention on the part of the operator. Switching from the main track to the branch is accomplished by holding down the rear steering handle on the trolley as it approaches the proper switch. This raises the front roller steering pin so that it engages the curved guide fin on the under side of the switch. There is no shock—the trolley simply glides smoothly into the branch track.

Perfect alignment of the trolley on the straight track is maintained by adjustable centering springs. Large-diameter wheels with roller bearings insure easy travel. The wheels have no flanges, and special tread contour minimizes wear on the track.

New Fire Extinguisher

The Fyre-Freez Corporation, 17 West 46th St., New York, N. Y., manufacturer of portable fire extinguishers, has issued, for free distribution, an illustrated bulletin that explains what "Fyre-Freez" is and how it freezes fire "at 110-deg. below zero."

According to this bulletin, the extinguishing medium used is carbon dioxide liquefied under pressure. When released from the extinguisher, the gas, due to the rapid expansion and high heat capacity, instantly freezes into a dry carbonic snow. This snow is intensely cold. (110-deg. below zero.) It does not melt but sublimes directly into gas.

The extinguishing effect of Fyre-Freez is three-fold:

1—The smothering effects of the carbonic gas.

2—The intense chilling effect of the carbonic snow.

3—The extinguishing of fires without spoilage.

Carbon dioxide is a non-conductor of electricity. It is harmless on rubber insulation. The projectile force of the carbonic snow, as it leaves the cone of the extinguisher, forces its way through the maze of wiring usually found around electrical equipment. It is particularly effective on burning gasoline, fuel and motor oils, paints, varnishes, lacquer and lacquer thinners, alcohol and carbon bisulphide.

It snuffs out this type of fire by blanketing the inflammable substance by the presence of the flying particles of carbonic snow. It is interesting to note that "Fyre-Freez" leaves no mark, discoloration or residue. It is harmless to anything with which it comes in contact, whether electrical equipment, metals or fabrics. Fyre-Freez is non-poisonous, non-corrosive, does not deteriorate and can be used effectively to combat fires at a distance of 20-ft.

Pratt & Lambert Inc. Meetings

Divisional Sales Meetings, for salesmen of Pratt & Lambert, Inc., were held at Chicago, Buffalo and New York City during January.

The Industrial sales meetings were held at the headquarters plant at Buffalo, January 9-10, with T. E. Murphy, Manager of Industrial Sales, presiding.

The Western Division met at the Drake Hotel, Chicago, January 4, 5 and 6. J. N. Welter, Chairman of the Board, delivered the address of welcome and was toastmaster at the banquet in Chicago, Thursday night.

H. S. Prescott, Resident Manager of the Eastern Division, New York, formally opened the three-day meeting at Hotel Astor, New York, Monday, January 16. S. L. Eason, Manager of the Architectural Service Department, New York, told of the construction work being done in the metropolis.

Colors, Designs and Finishes

(Continued from page 44)

done in dull gold. An extra large leather traveling case is fitted on the rear, where metal trunks were in vogue a few years ago.

A large majority of the closed cars on exhibit have panels on the side of the car running from the front windshield post beyond the rear post of the rear quarter window, similar to the Oldsmobile Six two-door sedan. These panels vary somewhat in shape and in color treatment but are usually painted in a contrasting color with the body. In fact, color harmony is obtained on the majority of the cars by using contrasting colors rather than by using shades or tones of the same color, as was the custom a year or so ago.

Lesser Changes

Several of the larger production cars show no great changes in external appearance of body design or method of painting, although the color combinations are new and distinctive. Among these are Studebaker, Nash, Buick, Reo, Auburn, Chevrolet, Jordan, Chrysler and Pontiac. On the other hand, Hudson, Essex, Oldsmobile, Hupmobile, Marmon, Stutz, Moon, Gardner, Dodge, Durant, LaSalle, Cadillac, Packard, Lincoln, Pierce Arrow, etc., have entirely new body designs and new styles of painting.

Wherever the body has been completely redesigned there are certain features of basic similarity, although the details are individual. For example, nearly all newly-designed bodies have short, cadet type visors instead of the long-peak visors formed by a continuation of the roof, which was popular a year or so ago. Cowl lamps have been replaced by

H W C

LACQUERS
ENAMELS

Solutions
Solvents

NITRO-CELLULOSE
PRODUCTS

Tel. Cortland 0935

HENRY V. WALKER CO.
17 John St. New York

For all work that requires Fast to Light

ANILINE DYES OR STAINS

OIL JET BLACK
SPIRIT JET BLACK
WATER JET BLACK
OIL WALNUT 119

Will Cut Your Color Costs.
Send For Free Testing Samples.

PYLAM PRODUCTS COMPANY
Manufacturing Chemists
799 Greenwich Street NEW YORK

--Is there a cheaper GOOD finish than Pure Shellac?

CADILLAC SHELLAC

users unanimously say

"NO"

CADILLAC SHELLAC CO., Inc.
Ferndale (DETROIT) Michigan

larger bracket lamps fastened at the junction of the rear edge of the hood with the body. Curved mouldings and panels placed in all kinds of positions are also new developments. Broader, fuller-crowned fenders with more gentle curves are also new.

Probably the greatest departure in conventional body design, without being freakish, is found in the new Dodge Victory Six. New and pleasing curves are found everywhere on the closed models which Dodge exhibits. The new design even extends to the fenders which are stamped from one piece of metal, without the usual seam or crimp on either the outside or inside faces.

Disc Wheels Passé

Disc wheels are few and far between. Artillery type wooden wheels and wire wheels, painted to match or harmonize with the body, seem to be more popular. Very few natural wooden wheels are seen. Where wire wheels are standard equipment, many cars are provided with spare wheels equipped with tires and set in fender wells on the running boards. In a few instances built-in shutters over the front of the radiator are lacquered to match the car. One car, the DuPont, shows all models with lacquered radiator shells and radiator fronts.

All Lacquer Jobs

All the unusual color combinations and color treatments exhibited at this automobile show are due to the widespread use of nitro-cellulose lacquer finishes. Not a single varnished job was observed in the whole show. Because of the quick-drying feature of lacquer, many automobile companies are able to offer their cus-

tomers what amounts to custom-painted cars.

Packard, Cadillac, La Salle, Stutz, Marmon, Nash, Studebaker, Auburn and many other companies offer their customers a wide selection of color combinations on many models. This could not be done with the old fashioned paint or varnish materials, because of the drying time required for each coat before the next one can be applied. For the same reason, in the old days more than one color, in addition to black, was seldom used on one model. Quick-drying lacquer permits the masking of one color while a second color is being sprayed, without undue loss of time; this one feature is mainly responsible for the new body designs and new color treatments.

Imitation of Costly Woods

Finishers will be interested, I believe, in learning about what is claimed to be a new idea that has come out for making imitations of the more costly cabinet woods on some of the cheaper woods, and especially those which do not show pores, such as basswood, fir, pine, gum, etc.

A spiked wheel of suitable size is used to make dents of proper shape, size and depth on the plain wood to be finished in imitation of some more costly wood. In comparison to the printing machine method the operator who uses this new method is not necessarily forced to make all the imitation pieces exactly alike; he has an opportunity to put individuality into his work.

The method of procedure begins with an application of white shellac, or clear lacquer, to the surface to be finished. Then go

Become an ALAKA user by Jumping at the Opportunity to save money on good finishes...

LACQUER & CHEMICAL CORP.
214-224 40th ST.-BROOKLYN N.Y
CHICAGO makers of ALAKA PHILADELPHIA

EASY NOW TO REPAIR DAMAGED FINISHES

Permanent repairs are easily and quickly made with Campbell's Stick Shellac. No use to lower prices because of damage—or to incur big expense of refinishing.

CAMPBELL'S STICK SHELLAC

Campbell's Stick Shellac easily restores scarred and scratched finishes to perfect condition. It is melted into the hole, dent or scratch and then rubbed down and polished. It is truly an ideal way to economically repair damaged finishes.

UNIVERSALLY USED

A color card of Campbell's Stick Shellac will be sent free to anyone upon request. Shows actual samples of the Shellac and the range of 54 different colors. Write for one today.

The M. L. CAMPBELL CO.
1007 W. 8th St. Kansas City, Mo.

ARE YOU INTERESTED IN A SLOW BURNING LACQUER?

Our laboratories have perfected a nitro cellulose lacquer that will ignite no quicker than ordinary paint.

This should answer your lacquer problems where the fire hazard is of great concern.

If you are finishing objects where you desire a heat resisting lacquer, we advise you to communicate with us for full particulars and samples.

SAMUEL H. FRENCH & CO.
Paint, Varnish and Lacquer Manufacturers
Philadelphia
Established 1844 Incorporated 1920

NEW JUST OFF THE PRESS

A thoroughly practical book in five parts.

I. Period Furniture and modern styles.

II. Furniture Decoration (Antique Shading, Glazing, etc.)

III. Furniture Finishing (Woods, Finishing Room Tools, Equipment, Materials, etc.)

IV. Furniture Patching.

V. Special Processes (Lamp Shades and Bases, Picture Frames, Japanning, Mirror Resilvering, etc.)

543 Pages—Fully Illustrated
Good Binding — Price $5.00
Remittance with order

INDUSTRIAL FINISHING
802 Wulsin Bldg. Indianapolis, Indiana

over the surface with the wheel to make the necessary indentations in imitation of the pores, after which the artificial "pores" are filled in the usual way with filler of suitable color for the wood to be imitated. When the filler is dry it is given a coat of colored surfacer to produce the required shade.

This method will probably never become popular in this country as a means of finishing new furniture on a commercial scale, due to the perfection to which the printing roll has been developed and because work with the wheel must be done by hand after the furniture has been built. But I believe it will become popular in refinishing the interior trim of homes, and perhaps in finishing new trim where the plain, cheaper woods are used. The method might also be used to advantage on certain lines of new furniture where such wood as gum or birch is used alongside genuine walnut, mahogany or oak.

To refinish furniture or interior trim in imitation of some of the more costly woods by this method, the procedure is as follows: First sandpaper the old finish to a smooth surface; then apply a ground coat of suitable color the same as in ordinary graining. The purpose of this coat is to make the surface a uniform color and hide the natural grain of the wood—if any shows.

When this ground coat is hard it is gone over with the wheels to make the necessary pores, after which the pores are filled with colored filler in the usual way. If the ground coat is dark enough it will not be necessary to use a colored surfacer; otherwise a little color may be added

but it should be an oil-soluble color, and transparent.

To finish new wood that does not show any great amount of grain, it is not necessary to use the shellac and colored surfacer as previously mentioned. Such wood may be stained with a water stain and the pores made after the stain is dry. The pores are then filled and the finishing process continued in the usual way.

Of course, the best method of procedure depends on the kind of wood, and the results to be obtained. The stain may be used on wood that has some figure which the stain will draw out, but the operator must be careful and run the pores to suit the grain; if he does this the grain will be an advantage and enhance the appearance of the finish.

In any event, the filler used should be colored entirely with pigments, because a liquid color in the filler would make the result too uncertain unless a coat of shellac or lacquer were applied over the stain before filling.

It is advisable to do the staining before making the pores; otherwise the water might swell them too much. A finisher with originality will be able to vary the processes here outlined and devise new ones to meet any situation.—W. R. K.

Windsor Chairs in Tudor Mahogany Lacquer Finish

1—Tudor mahogany oil stain. (Dry 24 hours.)
2—Spray coat clear lacquer sealer.
3—Rub with fine steel wool.
4—Spray coat clear finishing lacquer.
5—Rub with fine steel wool.
6—Spray coat clear finishing lacquer.
7—Rub with rubbing and polishing compounds. Wipe dry.—J. C.

New and Better LACQUERS

--for--

Lower Prices

HAF-CO—VELVET, FLAT LACQUER

Saves rubbing operation. Clear with that smooth, even film that closely resembles a rubbed finish. No pigment, wax nor gum used for flatting, consequently no gritty, gray, hazy nor cloudy appearance common to Flats using these flatting compounds.

HAF-CO—STRIPING LACQUER

Free flowing and hard drying. Can be had in flat or gloss. Will not rub off with polishing. In all colors, affording finest effects possible, and at a saving in your costs.

LACQUERS For Every Use

Trial quantity of five gallons or more will be shipped at barrel price.

WM. S. HATTEN CO.
Manufacturers of
Paint, Varnish, Enamel, Lacquer
165 N. May St. -- CHICAGO, ILL.

CLASSIFIED

Advertisements under this heading 45 cents a line, minimum charge $1.35. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

EXPERIENCED FINISHING FOREMAN.

Have had 18 years' experience in wood finishing; foreman on medium grade furniture 4½ years, 1 year foreman in piano finishing, 1½ years' experience as wood finishing instructor. Open for new connection. Address IF-185, care Industrial Finishing.

WANTED.

High-Grade Man — Thoroughly familiar with uses and application of Industrial Varnishes, Enamels and Lacquers—to act as demonstrator for established and progressive concern in the East. Excellent opportunity. Apply in writing. Information strictly confidential. Address IF-188, care Industrial Finishing.

FOREMAN FINISHER WANTED

By large manufacturer of wood handles. Must have experience in this line with lacquer, air drying and baking enamels. Supervise from 25 to 30 men. Address IF-190, care INDUSTRIAL FINISHING, Indianapolis, Ind.

Blindness to Modern Progress

(Continued from page 86)

and the vastly superior application possible with this modern equipment.

As a result a large plant is held dangerously near the red ink because those in charge profess to know that "she'll never do it." No one method is universally applicable, but an openness of mind will result in the discovery of the best method for an individual case—something that scores of plants should strive for.

"Good will" is attained when you make the customer feel he wants to come back and buy more.

Zapon of California Moved

The Zapon Co. of California—the Pacific Coast branch of the Zapon Co. of Stamford, Conn.—has recently moved the center of its activities to Oakland, California. The executive offices and main warehouse are centrally located at 1721 Poplar St., Oakland.

The company reports a steadily increased business in San Francisco, Oakland and the Pacific Northwest since the inception of the plan, two years ago, to place warehouse stocks in the principal cities on the Pacific Coast. Formerly all of this territory was serviced from Los Angeles, which was then the main branch.

Branches are now located at Los Angeles, San Francisco, Portland and Seattle.

The MELLISH-HAYWARD Co.
Manufacturers Established 1894
211 W. AUSTIN AVE. CHICAGO, ILLINOIS

Melrock Spray Booth--Pneu-Gun--Complete Spraying and Ventilating equipment for all kinds of industrial and product finishing.

The only spray equipment manufacturer that maintains a school for good finishing. We understand your problems.